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ABSTRACT

The current problems of higher education in Poland are addressed, with focus on its variety, operation, and history. The emphasis is on the development of events during the past decade and particularly since 1980. One in a series of monographs on national systems of higher education in Europe, this report covers the following: (1) introduction; (2) past experience (directions of development, higher education and manpower planning, and growth of education); (3) the organization of higher education institutions (access to higher education and titles and degrees conferred, general organizational patterns, and equivalence of diplomas, degrees, and academic titles); (4) system of enrollment; (5) course and curriculum development; (6) educational functions; (7) postgraduate education and refresher courses; (8) adult education; (9) staff development; (10) the student community (students in institutions of higher education, living conditions of students, and foreign students); (11) research in higher education institutions; (12) academic libraries; (13) physical facilities; (14) research on higher education; (15) higher education in Poland compared to that of other countries (higher education in Poland compared to that in the CMEA countries and higher education in Poland compared to that in the countries of the Europe region); (16) prospects for the future and conclusions; (17) annex; (18) list of institutions of higher education; and (19) bibliography. Contains 47 references. (SM)

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MONOGRAPHS ON HIGHER EDUCATION

Higher Education in Poland

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Higher Education in Poland

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Monographs on Higher Education
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PREFACE

CEPES is very pleased to present this latest addition to the series of monographs on national systems of higher education in the Europe Region. It describes the Polish system of higher education, one of the oldest and most interesting systems of higher learning on the Continent.

Poland, like many countries in Europe, faced the difficult task, in the aftermath of the Second World War, of rebuilding from scratch its system of advanced learning during a period when the national economy as a whole also required extensive reconstruction and development. The author of this monograph, Professor Jan Kluczyński, attaches due importance to this historic period providing an insightful analysis of Polish higher education policies at the time.

For many centuries, Poland has been at the crossroads of European cultures. In many instances, its exuberant intellectual and artistic life contributed very significantly to the formation and the emergence of European thought and civilization. Its scientists, its mathematicians, its philosophers, its composers, and its musicians became well-known all over Europe. As their intellectual roots were planted in Polish culture, their achievements served to underscore the excellence of the already existing universities in which knowledge has been created and transmitted over many centuries.

By building on its illustrious past, Polish higher education was able to get off to a good start in the 1950's and to confirm itself in the 1960's. The system of higher education has grown considerably, both quantitatively and qualitatively, by drawing, on the one hand, on the rich experience of well-established institutions, and on the other, by creating a large-scale network of non-traditional forms of higher education, particularly distance education, systematic refresher courses, and adult education. The latter forms of teaching and learning gave proof of their efficiency during the first two decades following the Second World War. Other portions of this monograph endeavour to highlight some of the major elements and structures of present-day Polish higher education. The result is a full-scale comprehensive description of professions, trades, and services and its willingness and capacity to critically analyze its achievements and to propose possible improvements. An essential aid in providing the government and the other institutions of Poland with the data needed to facilitate the management of such a large system is the Institute for Science Policy

and Higher Education, of Warsaw, of which the author of this monograph, Professor J. Kluczyński, is Director. A particularly instructive chapter is devoted to this Institute, with special attention being paid to the information-flow and feed-back between its researchers and higher education policy makers.

CEPES wishes to express its sincere thanks to the Polish authorities who facilitated the writing and the production of this monograph and who provided all possible assistance to Professor Kluczyński in order that he might bring this difficult task to a successful conclusion.

The final editing was completed by Wolfgang Vollmann, the linguistic checking, by Leland C. Barrows.

D. Chiţoran
Director a.i. CEPES

1. INTRODUCTION

The aim of this study is to familiarize the reader with the current problems of higher education in Poland. It covers the characteristic features of Polish higher education: its variety, its operation, and its history. Other questions are also treated, including the evolution of the enrollment system, the development of methods for educating and giving additional training to working people, teaching problems, and the development of university-sponsored research and the staffs necessary for carrying the latter out. Also discussed are the material conditions required for the operation of the educational system, including the university libraries, and problems of specific research on higher education. The final part of this study presents the prospects and future tasks of Polish higher education. The Annex gives basic statistical data.

For understandable reasons, the portions of this study devoted to the development of higher education stress the events of the last decade. Less space has been devoted to the problems of the earlier years. A great deal of attention has been devoted to the functioning of higher education in Poland since 1980.

The manuscript was written on the basis of information compiled and syntheses prepared at the Institute for Science Policy and Higher Education in Warsaw.

2. PAST EXPERIENCE

When examining the state of Polish higher education today and attempting to project its future, one cannot avoid considering its history, particularly certain contingencies of major importance.

During the years of post-war reconstruction, particularly the 1950's fundamental decisions were adopted as to the directions which reconstruction and development should take and as to the education of those cadres indispensable for the implementation of the ensuing programmes. As the result of decisions taken, directions of activity were traced regarding the entire system of education as well as future qualification structures and the level of education of the whole society.

Among the factors, which contributed to the perception of the goals of post-compulsory education reform, the following were the most important:

— Wartime losses in that portion of the population with secondary and higher education qualifications had been particularly high. The closing of all higher and secondary schools by the Nazis had created a five-year educational gap which had been only partially compensated by the results of clandestine teaching.

— The effects of the numerical shortage of qualified cadres were aggravated by the mismatch of the skills and the occupational composition acquired in the past and what was required for massive industrialization.

— Political and administrative system transformations demanded that entirely new categories of executive personnel be trained for the expanding sector of the nationalized economy and services.

— Urgent need for the democratization of the education system including wider access to higher education for the once under underprivileged strata, particularly youth from working class and peasant families.

— Need to facilitate the movement of the inadequate numbers of higher education graduates available into vacancies in which they were most needed, by means of special procedures for first employment placement.

The result of all of the above was the creation of a model of higher education, which, with only slight changes, has functioned up to the present day.

2.1. Directions of Development

The following were the general decisions which substantially influenced the present shape of higher education in Poland:

a. The development of material production, so indispensable in the post-war period, became the supreme goal, to which the system of education was subor-

dinated. Preference was then given to technical training, with specializations directly serving particular spheres of material production.

b. The general shortage of qualified cadres called for a drastic expansion of educational outflows. This requirement was met inter alia by shortening the period of study in many specializations and by the elaboration of so-called narrow profiles in the education of specialists. The latter were hastily prepared to perform the functions designated for them as part of the social division of labour.

c. The considerable shortage of qualified personnel in the economy during the post-war years and during the period of industrialization created specific conditions favouring the centralized control of the development of higher education and the sphere of employment of qualified staff as well as the use of simple instruments and methods for planning the development of education and the demand for qualified cadres.

d. The system of admission to higher education and the planned distribution of graduates were intended to ensure a proper selection of youth both in regard to aptitude and social background. For a prospective employer, this approach guaranteed an inflow of graduate specialists, who had already been linked to him through scholarships, preliminary job contracts, etc.

e. The stability of the tasks and the forms of education constitute another characteristic of the post-war development of higher education, the latter being subjected to certain modifications regarding the quantitative factors of development, as generated primarily by demographic and in certain periods also by economic conditions. Considerable impact was exerted by the growing numbers of secondary schools graduates, which in turn increased social pressures for the increased expansion of higher education. Stepped up investment efforts on the part of the state during certain periods also stimulated needs for increased higher education so as to meet the demand for cadres to fill new positions.

f. Some changes in the structure and the quality of education subsequently took place while the economy and the national culture gradually became saturated with qualified personnel. Steps were taken to improve the quality of education by lengthening the period of studies and by broadening the profiles of professional preparation. The transition from methods of central management to considerable decentralization required changes in the education of economists, specialists for state adminstration, etc. Also, changes in the strategies of the socio-economic and political development of the country exerted a substantial influence on the development of education. For example, the implementation of a general health service system required an increased number of medical staff members. The expansion of the food sector required appropriately prepared specialists in the field of food production and processing, and the development of general education was dependent on properly prepared teachers.

2.2. Higher Education and Manpower Planning

From 1956 to 1985, higher education provided over 1.5 million graduates for the economy and the national culture. The rate of growth of higher education is illustrated by the following indices:

— During the immediate post-war reconstruction of the country (through 1949) the existing institutions turned out about 4,000 graduates each year;

— During the first period of industrialization (corresponding to the 1950—1955 six-year plan), the average annual inflow of graduates to the economy and national culture reached 25,000;

— During the years 1960—1965, opinions about the over-production of intellectuals were voiced. The result was that leading universities were forced to control the volume of their enrollments and to lengthen the duration of studies. They continued nevertheless to turn out some 21,000 graduates annually;

— The years, 1966—1970, witnessed a subsequent stage in the development of higher education, a manifestation of which was an almost twofold growth in the number of students as compared with that of the 1956—1965 period;

— During the 1971—1975 period, further acceleration in the development of higher education took place, leading to the graduation of 70,000 students annually;

— From 1976 to 1985, the numbers of students enrolled in higher education decreased as a result of enrollment limitations which were first put into effect in 1979, particularly with regard to adult education. However, the numbers of graduations continued to increase, reaching 80,000 in 1980, as a result of the higher enrollments in the preceding period. But since 1980, the graduation index of higher education development has declined (see Annex, Table 1).

One result of the development of higher education in Poland has been an increase in the share of qualified personnel employed in the socialized sector of the economy. For example, during the 1950—1955 period, there were only 6 higher education graduates available for every 100 newly created jobs. During the last decade, there were 27 graduates for every 100 jobs, thus 4.5 times more jobs than during the 1950—1955 period. Likewise, at the end of the first stage of industrialization (1955), less than 200,000 people with higher education qualifications were working in the socialized sector (which constituted 2.9 per cent of total employment); in 1984, this figure had gone up to 10,035,000 (8.9 per cent). It is thus easy to observe that the high rate of growth of higher education, especially during the last decade, caused a massive influx of graduates into all divisions and branches of the economy and national culture, thus eliminating the shortage of qualified cadres which had prevailed throughout the immediate post-war period.

One should also stress that for almost a quarter of a century Polish higher education was able to satisfy the employment-related and the individual demand for academic training fairly harmoniously. Until recently, the belief was held that this situation would continue indefinitely. A prediction was made that the effects of technological progress would lead to changes in the intersectorial distribution of the occupationally active population. It was also assumed that the increased level of education of the population would be of use to the expanding service sector. Until the end of the 1970's, experience seemed to confirm that these views were correct. Although for certain occupations and levels of education some structural discrepancies between what was offered and what was required existed on the labour market, the general deficit of qualified cadres alleviated the tensions which sometimes arose in particular trades or regions of the country.

It should be stressed that such tensions in the qualified labour market have usually resulted from the traditional slowness on the part of the educational system to respond to the changing requirements that have been created by rapid technological development and changes in production processes. Also, the spatial availability of institutions of higher learning and subsequently the regional flows of graduates have not always matched the local labour market demands which various employers created in various parts of the country. Although mismatches between local educational availabilities and employment vacancies were perceptible, the general supply and demand of qualified cadres remained more or less in equilibrium.

Contradictions between the types of higher education training available and employment possibilities for new graduates began to make themselves felt only after 1980. They will probably become sharper in the years to come. The following phenomena account for these contradictions:

a. The break-down in the mid 1970's of the country's steady rate of economic development suddenly became very evident in 1980. At that time, a slump in production and services occurred; various ventures were slowed down or were actually stopped. The balance of foreign trade became negative, and continued perturbations occurred in the functioning of the domestic market. These were the principal factors leading to a reduction in the demand for specialists.

b. Changes in employment policy, especially a reduction in total employment and the need to effect inter-regional transfers of manpower between different sectors of the national economy reduced the absorptiveness of the labour market for higher education graduates with various types of training.

c. Economic reforms aimed at improving economic efficiency and at eradicating administrative overgrowth and reducing production costs through a more rational use of the labour force. The result is expected to be a more rational use of labour and by the same token a reduction in the global demand for cadres with the highest levels of qualification.

Although no major perturbations and strains in the qualified labour market have occurred in recent years, such problems may yet reappear in the near future.

What is at the bottom of these conjunctures and what are their symptoms?

The fundamental issue which is already being raised with respect to the labour market (and which will be raised even more forcefully in the years to come), will be that of the correct relative proportions of graduates at various levels. During the entire 1956—1980 period, the number of school leavers from junior vocational schools was smaller than the number of suitable jobs offered. A similar situation prevailed with regard to higher education and secondary vocational school graduates with regard to vacancies for technical and professional personnel. After 1980, however, the number of higher and secondary school graduates have begun to exceed the absolute numbers of white-collar jobs available. Thus, the existing labour shortage is one which only affects blue-collar jobs. The question which therefore arises is whether in such circumstances the further expansion of the enrollment of youth into secondary and higher education should not perhaps be limited in favour of an expansion of the vocational schools which train skilled workers.

Another solution might be the placement of some of the technicians from secondary professional education into blue-collolar jobs. Such vertical substitution

has already taken place in practice, even if on a limited scale. Still, another possible choice, cherished in the past by the advocates of a reform in favour of universal, secondary education, would entail fixing ultimate decisions on further education versus immediate employment, on individual aptitudes, the situation prevailing in the labour market, and current socio-economic conditions. The sense of such a manoeuvre in education would consist in making the educational system more flexible, more responsive to the changing conditions and needs of the labour market. A graduate prepared in this way would have greater general knowledge, be better able to adjust himself to different conditions, and be better prepared for active participation in the social and cultural life of the country.

Each of the suggested courses of action for the future of post-elementary education will have consequences for higher education. Higher education cannot remain indifferent to changes made at lower levels of the system of education. All the patterns of behaviour, the aspirations, and the motivations of parents and children, which have been shaped over the years, concerning the functioning of the school system — or perhaps as a result of the school system — should be taken into account by higher education.

2.3. Growth of Education

The number of first year full-time students in higher education increased from 46,000 in 1970 to 75,000 in 1975, and the rate of admissions to university training of youth of university attendance age increased from 6.5 to 10.2 per cent. At the same time, the number of persons accepted for the first year of extramural studies grew from 32,000 in 1970 to about 45,000 in 1975. This expansion of extramural enrollment was mainly the result of an increase in the advanced training of elementary and secondary school teachers.

In the mid-1970's, the rate of enrollment in higher education (full-time and extramural courses) of 19-year-old's amounted to some 13 to 14 per cent. One should also note that higher education establishments enrolled more than 30 per cent of the total number of secondary school leavers.

As a result of growing difficulties in the rational employment of university graduates and in connection with a demographic trend whereby the numbers of youth of university admission age registered a steady decline, the 1976—1980 period witnessed a gradual reduction of enrollment quotas, both for full-time study and even more so for extramural courses. As a result of decisions which were taken, the number of first year full-time students decreased to 63,000 in 1980 accompanied by a slight increase in the rate of enrollment to 10.3 per cent. The number of persons accepted for the first year of extramural courses went down to 30,000 in 1980. In 1984, 56,000 first year students were enrolled in full-time courses (representing a cohort-enrollment index of 9.7 per cent), and less than 11,000 in extramural courses. The number of students entering full-time programmes in higher education during the 1975—1984 period declined by some 30 per cent, while those in the extramural system declined by nearly 80 per cent. Altogether, there was a 44 per cent decrease in overall university admissions.

Stabilization followed by a drop in enrollment levels resulted in a decrease in the total number of students from 468,000 in 1975 to 454,000 in 1981, and

350,000 in 1984. Particularly noticeable was a decline in the number of extramural students: from 185,000 in 1976, to 155,000 in 1981, and 91,000 in 1984. Therefore, over a period of only nine years, the number of adult education students declined by almost a half. On the other hand, the number of full-time education students increased from 283,000 in 1975 to 299,000 in 1980. It was only in 1980 that the number shrunk to 294,000 persons, and then declined further, to 274,000, in 1984 (see Annex, Table 4).

It is worth mentioning that enrollments peaked during the 1977—1978 academic year during which the total number of students went up to almost half a milion (491,000).

A tendency in favour of limiting the number of enrollments in higher education can be observed during periods of economic slump which are accompanied by difficulties on the job market. In order to assure jobs for higher education and post-secondary school graduates, educational policy led to the reduction of enrollments at advanced levels of education. The declining enrollments of the late 1970's and early 1980's were also the result of the insuficient educational capacity of institutions of higher learning in relation to the large numbers of enrolled students. It should be stressed, however, that the socio-economic, consequences of these limitations have gone beyond the specific periods in which the economy functioned under conditions of crisis.

As a result of the large numbers of student enrollments in the 1970's, about 70,000 graduates in the 1980—1983 period (of whom 45,000 had been enrolled in full-time courses) were supplied annually to various spheres of industry and to the administration. This very abundant supply of graduates gave rise to temporary difficulties so far as their rational employment in certain professions was concerned. After 1977, as a result of the stabilization of enrollments, the number of graduates decreased to 64,200.

The reduced demand for specialists with higher education training, which is currently being recorded in Poland, is undoubtedly a temporary phenomenon linked to the early stages of economic reform and to budgetary austerity, both of which have contributed to a slowdown in the rate of development of the non-productive sphere (education, science, culture, and health protection). One can assume, however, that as the economic crisis is overcome, the demand for personnel with higher education will increase once again. Thus the current limitations in enrollments are not overly radical and will only be temporary.

In connection with the stabilization and then the reduction in enrollments after 1977, one could note a slowdown in growth and later a drop in the level of the majority of indices concerning higher education. In particular, the index of the number of students per 10,000 inhabitants of the country decreased: from about 140 in 1975 to 94 in 1984. However, with the smaller 19-year-old age cohorts during the 1980's, level of enrollment in higher education has not been adversely affected. It is worth emphasizing that the share of secondary (general and vocational) school graduates admitted to higher education is slightly more than 26 per cent of the total.

The socio-economic situation in general as well as the condition of the job market for graduates (particularly during the 1980—1982 period) has exerted an influence on the number of candidates for studies. However, the number of

general education and vocational secondary school graduates, those constituting the group of potential candidates for advanced studies, has decreased only slightly in recent years. The drop in the total number of secondary school leavers observed during these years was smaller than the decline in the number of candidates for studies. As an illustration, the number of secondary school leavers in selected years was as follows: 1976: 202,000 students; 1979: 193,000; 1980: 186,000; 1982: 175,000 and 1983: 130,000. During the same years, the following numbers of students applied for admission to the universities: 166,000; 140,000; 129,000; 110,000; and 101,000 students respectively. Therefore, if during the years from 1976 to 1983 the number of school leavers declined by 72,000 students (representing 35.6 per cent), the number of candidates for studies dropped by 65,000, i.e. 39.2 per cent. The conclusion which one might therefore draw is that the reduced pressures in recent years for admission to education has been conditioned primarily by the reduced interest of secondary school graduates in pursuing studies at the higher education level.

The phenomena described above are particularly noticeable with regard to the adult education track. Here one can note a continuous decline in the number of candidates as well as a reduced interest on the part of industry and business in delegating their employees for extramural studies. Moreover, one can note that in the mid 1970's, that is the period of the peak pressure of youth on higher education, the number of candidates for studies exceeded the number of those who were accepted by a factor of 2.6, whereas in 1982 this ratio was 1.7:1; in 1983, 1.9:1; and in 1984, somewhat better: 2.1:1.

Until 1977, one of the barriers to the continued growth of higher education was a shortage of teaching staff. However, as a result of the marked increase in the numbers of new cadres over the past few years as well as the reduced growth of higher education, the situation considerably improved. It is worth adding that already in 1970 Poland was one of the few countries in the world in which the student/teacher ratio was below 10 to 1. In 1970, there were 8 students per teacher, whereas in 1984, only 6 students. In short, Poland in this respect has reached a state close to the optimum.

3. THE ORGANIZATION OF HIGHER EDUCATION INSTITUTIONS

3.1. Access to Higher Education and Titles and Degrees Conferred

Any person possessing a secondary school certificate qualifying the holder for university admission may enroll in higher education. This certificate can be obtained either after having completed eight years of study in a compulsory elementary school and four years in a general secondary school or after five years of attendance at a vocational secondary school or a vocational lyceum. Hence, the total educational period prior to university enrollment is at least twelve years long or longer.

Higher education, depending on type and discipline, lasts, on the average, from four to six years. An academic year has two semesters at the end of which credits are obtained for courses and examinations passed. In the majority of colleges, students prepare theses, which, along with success on final examinations, are the bases for graduation and the award of diplomas indicating various specializations: engineer, economist, Master of technical sciences, Master of Arts, etc. Some courses, however, last longer than others. Medical studies, for example, last six years terminating with a cycle of final examinations, but they do not require theses.

Further postgraduate studies are usually pursued as part of one's professional career in collaboration with one's employer and a suitable university.

A *doctoral* degree is awarded to a college graduate after he has submitted a doctoral thesis, passed the requisite examinations, and defended his thesis publicly.

An *habilitated doctoral* degree (necessary for being appointed to a full professorship) may be obtained by the holder of a doctoral degree who has achieved satisfactory results on a qualifying examination and has written and defended another thesis.

Doctoral and habilitated doctoral degrees are conferred by faculty councils at colleges and scientific councils in research institutes which are authorized to do so. Institutes may also request that the ministers supervising their work propose designated research workers for the academic titles of *Full Professor* and *Associate Professor*. The ministers in question submit such requests to the Prime Minister who in turn submits them to the People's State Council.

Eminent professors may receive corresponding membership or full membership in the Polish Academy of Sciences.

3.2. General Organizational Patterns

The principal responsibility for the socio-economic development of the country is borne by the 92 civilian academic institutions, including: 11 univer-

sities, 18 higher technical schools, 9 agricultural academies, 5 academies of economics, 10 higher pedagogical schools, 11 medical academies, 2 higher marine schools, 17 schools of fine arts, the Academy of Social Sciences of the Central Committee, 6 academies of physical education, and 2 theological academies. The sole private academic institution is the Lublin Catholic University (see Annex, Table 3).

The universities, the higher technical and pedagogical schools, the agricultural academies, and the academies of economics are financed and supervised by the Ministry of Science and Higher Education, which at the same time coordinates the functioning of the entire sub-system of civilian higher education. Medical academies are subordinated to the Ministry of Health and Social Welfare; higher marine schools, to the Office of Merchant Marine; higher artistic schools (including 6 higher schools of arts, 8 musical, and 3 theatre schools), to the Ministry of Culture and Art; 6 higher schools of physical education, to the Main Committee for Physical Culture, Sport, and Tourism.

If the statutes of the school do not otherwise provide, the basic organizational unit which encompasses the principal subjects of studies with regard to their research, didactic, and training activities is the department (faculty). A department can comprise institutes, carrying out more specialized research and educational activities within a given group of academic disciplines, and chairs, which concentrate their educational activities around a single discipline. Apart from departmental institutes, intra-school or inter-university institutes also operate. Institutes are usually composed of didactic and scientific divisions. Workshops and laboratories may operate in schools as separate organizational units.

Establishments of higher learning can also carry out "distant" educational activities in affiliated departments, branches, and consultation centres.

The composition and spatial distribution of universities and professional schools in Poland is linked to the steps which were taken during the entire postwar period to train qualified personnel. The development of the system of higher education was characterized not only by discontinuous growth in the number of students, graduates, and teachers, but also by changes in the material base and equipment of schools as well as by the development and differentiation of elements, making up a network of specialized schools, branches, departments, and consultation centres.

The number of academic centres increased from 16 in 1960 to 29 in 1984. In that period, 13 new centres and 17 new schools were established. To support this network, 19 affiliated departments and 16 branches were established, of which 5 affiliated departments and 8 branches are located in towns of which there had been no higher education institutions in the past.

Three distinct groups of academic centres in Poland can be indentified:

a. Large centres (7—13 schools): Warsaw, Cracow, Wroclaw, Gdańsk, Katowice-Gliwice, and Poznań;
b. Medium centres (3—6 schools): Białystok, Bydgoszcz, Toruń, Łódź, Rzeszów, Szczecin, and Lublin;
c. Small centres (less than 2 schools): Częstochowa, Kielce, Radom, Koszalin, Olsztyn, Opole, Siedlce, Słupsk, and Zielona Góra, as well as the following branches: Biała Podlaska, Cieszyn, Gorzów Wielkopolski, Jelenia Góra, Legnica, Płock, Walbrzych, and Zamość.

Out of the total number of 8,647 professors and assistant professors (beginning of 1984), 71 per cent worked in large centres, 19 per cent in medium centres, and only 10 per cent in small centres.

This situation has led to the hierarchization of the various academic centres. The largest centres, having schools of various types, are able to appropriate the largest numbers of academic staff members and of physical equipment. It is here that broad research in various branches of science can be carried out. Centres in the second and third groups try at least to attain good results in the areas in which they have specialized.

The amendment of July 1985 to the Law on Higher Education provides for the setting up of regional advisory councils for higher education by the appropriate county councils in consultation with the higher education institutions of the region. The purpose of these councils is to ensure better contact between the schools in question and the economy and culture of the region. Each council is to be composed of political, social, economic, academic, and cultural personalities from the region.

According to the provisions of the Law of 1982, as amended in July 1985, institutions of higher education in Poland are state organizational units created for the purposes of conducting research and of providing training and socialist education for students, in keeping with the Constitution of the Polish People's Republic. The schools are self-governing communities of academic teachers, students, and other workers. They are expected to participate in the all-around development of science, culture, and the national economy.

Institutions of higher education are established, dissolved, and transformed by act of the Sejm (Parliament) of the Polish People's Republic. The Minister of Science and Higher Education is responsible for the implementation of state policy in the field of higher education. He therefore coordinates, supervises, and controls the activities of all institutions.

The schools operate according to their statutes. A standard statute is prepared by the Minister of Science and Higher Education. It is adopted by the Senate, on prior consultation with the university collective organs, organizational units, and social and political organizations operating in the given school. The statute is then approved by the ministry.

The Council of Science and Higher Education is an elected organ which represents all the institutions of higher education in Poland. Additionally, there are councils of higher medical, artistic, and physical education which represent respective schools of higher learning. The school representatives sitting on the Council are elected by their respective Senates; — one representative from each higher institution (very small ones jointly electing one representative).

Upon the motion of the Minister of Science and Higher Education, the Council fixes the main lines of research and training for academic staff-members in higher education. It advises on the preparation of draft plans of higher education development, organizational solutions, enrollments, the preparation of plans of study and curricula, and it contributes to the elaboration of many other elements of state policy in the field of higher education.

Universities are headed by rectors, who are elected for three year terms by their respective Senates from among 2 to 4 candidates approved by the minister. Rectors have supervisory authority over their institutions. Only a professor

can be a rector, or exceptionally, an assistant professor holding the degree of habilitated doctor.

Departments are headed by deans elected from among 2 to 4 candidates in each case by given departmental councils for three year terms. Only professors or assistant professors can be candidates. They must be approved by the newly elected rector, in consultation with the minister. Specialized institutes operating outside university departments are headed by directors elected by their councils according to a procedure which is similar to the election of deans by departmental councils. Directors of departmental institutes as well as heads of chairs, divisions, and clinics, are appointed by their respective rectors from among professors and associate professors of given schools, upon the motions of given deans in consultation with their departmental councils.

Senates and departmental councils or councils of inter-departmental institutes make up the collective bodies of higher education institutions. The Senate is composed of rectors; deputy rectors; deans of departments and directors of inter-departmental institutes; and representatives of faculty councils and inter-departmental institutes elected from among professors and assistant professors; 2 to 4 representatives of other academic staff; representatives of political and social organizations including the student associations; and representatives of school administration employees including the Directors of the Libraries and the Heads of military training courses. Departmental councils are made up of professors and assistant professors employed in given departments, 2 representatives of other academic teachers, and one representative each of the political, social, and union organizations active in given departments.

Senates and department councils perform advisory functions for the rectors and the deans in addition to their electoral functions, and their functions relative to the conferring of scientific degrees and titles.

A person holding the advanced degree of habilitated doctor, which is conferred according to a special procedure, can be appointed to a post of professor or assistant professor in a higher education institution. The minister nominates the holders of these posts upon the motions of the rectors concerned after the latter have consulted with the given departmental councils and the senates.

Polish higher education includes both a system of full-time studies and a system of adult education. In additon to studies run according to uniform plans and programmes (the dominant form in the Polish system of higher education), full-time alternative studies and individual studies are also available for employed people in evening classes and extramural programmes.

In principle, an M.A. course in all university and agricultural disciplines taken on a full-time basis requires, on the average, from four to five years to complete. Exceptions are veterinary medicine, which requires 11 semesters (5.5 years), and certain medical studies (pharmaceutics and stomatology). The curricula of the higher technical schools and the economics schools can be completed on the average in 9 semesters (4.5 years), and those of the fine arts academies, in 4 to 5 years. Medical studies require 6 years for completion.

Curricula are designed by individual schools. According to the new regulations, a detailed plan and timetable of classes is submitted to the organs of student self-government so that they may express their opinions. Apart from compulsory subjects, the curricula provide for the possibility of upgrading knowledge in indi-

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vidual disciplines through participation in elective classes. Students engage in practical work after the 2nd, the 4th, or the 6th semesters. The intention is to convey to students a better perception of life and to introduce them to the environment and the conditions of work in given professions. Apart from his major or principal course of study, a student, with the consent of the appropriate deans, can enroll in another discipline or course, even if taught in other schools, if his performance in his main course justifies the extra study involved.

Academic credit is measured in terms of semesters and of academic years. Being passed to the succeeding semester is dependent upon success in the examinations marking the end of the previous semester and credit for having completed the work of that semester. In case a student fails to secure a satisfactory mark in a given examination, he has a right to repeat the examination. He can also apply to have a given examination administered by a special commission. Such an examination can also be ordered at the initiative of the dean. In case a student other than a first-year sutdent fails to earn the required credits for a given semester, the dean may permit him to repeat the year or the semester or to conditionally enter the next semester. The dean can also remove the student's name from the list of students. A student can normally be authorized to repeat a year or a semester only once throughout his studies. A second repetition is only possible in the case of major and justified circumstances.

Most students complete their studies with an M.A. examination taken after all the individual examinations in required courses have been passed and after an M.A. thesis has been written. Apart from the professional title (master, master engineer, master of medicine), the diploma may also indicate the given specialization.

3.3. Equivalence of Diplomas, Degrees, and Academic Titles

Active international co-operation is one of the bases of the existence and an indispensable condition for the development of every system of higher education. In this respect, the exchange of students and teachers and the equivalence of diplomas and degrees are of paramount importance for the accomplishment of the following tasks:

— ensuring the appropriate formal international prestige of Polish higher education institutions and of the diplomas and certificates issued by them;

— guaranteeing the appropriate status of Polish specialists who are working abroad;

— creation of favourable employment and career terms for foreign graduates of Polish higher education institutions when they return home.

Equivalences are governed by multilateral and bilateral agreements on the recognition and equivalence of educational documents and certificates. So far, Poland has concluded two such multilateral agreements. On 7 June 1972, at the initiative of Poland, the socialist countries signed the "Convention of the Socialist Countries on the Mutual Recognition of Equivalence of Documents on Education, Scientific Degrees, and Titles", called the "Prague Convention" after the city in which it was signed.

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Another multilateral convention regarding equivalence to which Poland is a signatory is the "Convention on the Recognition of Studies, Diplomas and Degrees concerning Higher Education in the States belonging to the Europe Region" (the so-called "Paris Convention"), prepared under the auspices of Unesco. It was signed on 21 December 1979 and was ratified by Poland on 28 October 1982.

The provisions of these Conventions have been concretized in bilateral agreements signed between the governments of individual states. So far, Poland has signed such agreements with the majority of the CMEA countries (in 1974 with the USSR, in 1977 with the GDR and Bulgaria, in 1978 with Yugoslavia, and in 1980 with Hungary). Those agreements determine the equivalence of certificates and of diplomas, of academic degrees and titles, and the rights of their holders to undertake further studies and professional work. Poland has not made similar agreements with the highly advanced capitalist countries. The Paris Convention, despite its major significance, only *mentions* the recognition of educational documents; it does not *define* equivalence at individual levels. As regards equivalence agreements with developing countries, Poland has signed only one such agreement. It is with the Arab Republic of Syria. It is a derivation of the the Executive Programme of the Agreement on Cultural Co-operation, concluded on 16 April 1984, linking the two countries.

At present, Poland is negotiating the signature of similar agreements on the equivalence of documents of education with several other developing countries. Information on the system of studies in Poland has been furnished to other interested non-European countries. It should be stressed, at this point, that the road leading from the first preliminary exchanges of information to the signing of concrete agreements is usually long and hard. This situation is the result both of significant differences in the education systems of given countries and of political factors.

4. SYSTEM OF ENROLLMENT

The rules for admission to higher education are uniform throughout Poland. A pre-condition for applying to be accepted as a candidate for studies is the certified completion of secondary school (matriculation). The results earned on the required entrance examination are a basic criterion for selection. These rules have remained basically unchanged since 1947 when entrance examinations were first introduced.

Until the mid-1960's, the initial enrollment of students was based exclusively on an evaluation of the level of knowledge and the abilities of candidates as measured by the university entrance examination. The first attempts at expanding the selection criteria were made in 1965 with an emphasis on "credits" earned in secondary school. It thus became possible for candidates to earn additional points for very good and for good marks awarded during the last two years of secondary scool and on their matriculation school certificate. At the same time, in order to arrest the constant decline in the numbers of working-class and peasant youth in higher education, preferential points were also applied with regard to applicants from these backgrounds.

Further modifications in the selection system took place successively during the years 1968, 1972, 1975, and 1979. The entrance examination continued to be the principal criterion for admission. This tendency is certainly a particular characteristic of the Polish system of enrollment in higher education. The remaining actions which can be distinguished in the period since 1965 have been temporary innovations. Thus, since 1975, the winners and finalists of the national stage of the student olympiads and of competitions in given subjects in secondary schools, the winners of the central selections of Young Masters of Technology Tournaments, and provisionally, the three best graduates selected for university enrollment by the Secondary School Teachers' Councils have been admitted to university studies without having to take the entrance examinations.

At present, university enrollment is based on the so-called combined point system. The conversion of examination marks into points, their scale having been expanded, leads to a more precise differentiation of candidates thus facilitating the process of qualification for studies. The total sum of points obtained as a result of entrance examinations and other additional criteria determine admission to higher education. The additional criteria for which extra points are awarded include good marks in secondary school, pre-university periods of employment, basic military service, and, as of 1984—85 (to a limited extent), social background (that is, positive selection of children of working-class and peasant families).

The application of differentiated forms of preference is primarily the result of efforts made to accomplish two tasks: the selection of the most talented of the candidates for university studies and the assurance of a more nearly equal social composition of the student body. The measures so far introduced have

only been partially effective. Several explanations can be given. The entrance examinations tend to eliminate more young people of working-class and peasant origins than is the case with candidates from other social groups. On the other hand, given that the entrance examination is currently the decisive element in the admissions proceedings, the additional criteria can only make themselves felt in the cases of those candidates who have successfully passed the entrance examination.

Work currently under way for the elaboration of a new system of admission is based on the assumption that the high quality of the student body can only be assured by means of an accurate system of recruitment and selection, one which also respects the principle of the democratization of higher education. A new system of admission which was introduced during the 1986—1987 academic year is therefore based on an overall assessment of the probabilities which ensure the candidates will do well in higher education.

According to the revised principles of recruitment, the first essential recommendation that a student be admitted to higher education is made by his secondary school on the strength of the marks which he has earned on the matriculation school certificate and on the opinion of the candidate formulated by the teachers' council. The university completes the selection process, being guided by this recommendation as well as the results of the entrance examination.

Several investigations have shown that consideration of the results of the entrance examination along with information provided by the secondary school increases the probability that a student's chances of successfully completing his studies are correctly predicted. Indeed, this method of selection stands to reduce the margin of error by one-third. Given that only those secondary school graduates of working class and of peasant background who have earned high marks on their secondary school certificates will actually apply for admission to higher education and that the selection system itself stresses the secondary school record, the selection process is bound, at least indirectly, to favour young people of worker and peasant origin, the factor of quality having been fully taken into consideration.

The entrance examination continues to be the basic element of selection in this modified admission system. One proposed model of recruitment is based almost entirely on the candidate's own achievements. Nevertheless, it does not exclude the possibility of applying preferences resulting from the social policy of the government. Nonetheless, any form of preference would be treated only as a temporary measure, the duration of which would be determined by changes in the entire system of national education. In order to democratize the new selection principles, preferences must be tied closely to the qualitative aspects of admissions. Therefore, it is suggested that all forms of preferences be expressed in terms of percentages derived from the sums of points obtained through the basic stages of selection, based on entrance and secondary school examinations.

The efforts directed at the successful recruitment of students from the social strata of Polish society which have so far been insufficiently represented in Polish higher education cannot continue to depend on mere improvements in the admissions procedures. The fundamental problem is one of expanding the recruitment base through a stimulation of the educational aspirations of secondary school students. One way in which this task could be accomplished is by means of higher

education preparatory courses designed primarily for rural and working class youth and offered free of charge by the universities. Professional guidance and preparatory courses could in time make the whole question of positive social admissions procedures redundant.

It is worth noting at this point that beginning with the 1982—1983 academic year, the system of admission to agricultural studies has permitted youth from villages and small towns of up to 5,000 inhabitants who have passed the entrance examinations to be exempt from any further qualification proceedings. During the 1984—1985 academic year, this principle was extended to teacher training programmes.

Studies have shown that the multifactor method of selecting candidates for higher education sensitizes the selection system to the need to maintain a proper balance in the social structure of the student body. Thus it makes a major contribution to the success of the social policy of the socialist state.

The Institute for Science Policy and Higher Education has been conducting studies of admissions to higher education in Poland, of the educational aspirations of youth, and of the principles of qualification for a long time, but particularly since 1971. The Consultative and Research Centre for Recruitment for Higher Studies was established at that Institute following a decision of the Minister of Science and Higher Education.

In 1984, the Centre conducted wide-ranging consultations on the proposed changes in the admissions system. Proposals prepared by the Centre were disseminated by the central and the local press organs and broadly commented upon by radio and television. A questionnaire was published in the press to which some 12,000 persons responded. Proposals were discussed with 148 industrial establishments; questionnaire surveys were administered in 1,922 secondary schools and in 35 institutions of higher education through meetings attended by some 6,000 academic staff members, employees in higher education administration, and students. Opinions were also obtained from the Council of Science and Higher Education, the Socialist Youth Unions, and the Polish Teachers Union. Opinions on this subject were also expressed by the Sixteenth Plenary Meeting of the Central Committee of the Polish United Workers' Party. In addition, the Centre received about 400 letters from concerned citizens.

In order to make the collected materials scientifically credible, the Centre interviewed a representative nationwide sample of 2,300 respondents.

As a result of the work of the Centre, the Minister of Science and Higher Education decided:

a. To introduce changes during the 1984—1985 academic year in the system of enrollment in higher education as the first stage in a profound modification of the admissions system.

b. To move step by step towards the complete abolition of preferential points based on the social backgrounds of candidates, retaining them only temporarily in a few fields.

c. To expand the categories of candidates who are exempt from further qualification proceedings following success in the entrance examination.

Thus, changes have been introduced which while being moderate, point the way to further improvements in the method of selecting candidates for higher education. Research and studies on this subject are still under way.

5. COURSE AND CURRICULUM DEVELOPMENT

The transformations which have been occurring in the economic and social life of Poland have not been without influence on the functioning of higher education. First of all, the rapid growth in the numbers of students and the expansions of the educational network resulted in the fact that higher education ceased to be elitist. Instead, it became fairly accessible. Moreover, social and individual expectations vis-a-vis higher education have changed.

A basic didactic problem — very complicated and difficult to solve — is the determination of the contemporary tasks and functions of institutions of higher education as well as of the contents of instruction. Given the present social and economic conditions, the process of making higher education increasingly universal has required the introduction of a diversified model, the aim of which is to facilitate the implementation of the changing tasks of higher education.

An elaborated concept of the diversification of tasks of higher education must be accompanied by appropriate measures with regard to the designation of the contents of education. The rationale for accomplishing this task seems to be the must important issue in the improvement of the instructional tasks of higher education institutions. These matters, which give rise to many controversies, require very careful solutions.

First of all, there seems to be a major need to formulate and to adopt new concepts of curricula. Those that guided education until quite recently, particularly those calling for encyclopedic, formal, and utilitarian education, have long ceased to match the requirements of contemporary higher education. Their continued influence has led to a considerable divorce between the contents of education and the needs of contemporary economics, culture, education, and science. They were of little use for the preparation of students for participation in the social life of the country, nor did they meet the individual expectations of the latter.

Thus it is necessary to elaborate new concepts to guide the formulation of curricula in institutions of higher education. Work is being undertaken in various directions on the theoretical and practical aspects of the contents of education. The preliminary results give grounds for optimism, for the increasing amount of research and studies on new contents of education seem to be paving the way for desirable changes.

In addition to theoretical problems, there are also numerous practical ones connected with the elaboration of the contents of education waiting to be solved. At the top of the list of the latter are the issues involved in linking curricula to the actual needs of the economy, of education, of science, and of culture. It is

also necessary to determine the appropriate proportions in which different types of educational activities should be offered, i.e. the balance between general education, basic professional knowledge, and the highly specialized content in programmes of various types of institutions. Finally, due consideration should be given to problems linked to the scope of those courses required of all students and to those issues related to the proportion which is allocated to general education and the degree of programme differentiation in curricula.

The solutions will in a large measure depend on the initiative and the participation of academic communities which in fact are granted major responsibilities under the law, particularly for such matters as educational plans and programmes.

A constant concern of all higher education institutions is to raise the quality of education. The implementation of this goal depends to a great extent upon the improvement of teaching methods and media. It could also be assisted by granting increased importance to the training of academic staff. Apart from the rudiments of pedagogical, psychological, and sociological knowledge, the scope of such training must encompass certain fields of knowledge which are relatively little known and poorly used such as the organization and the management of human teams, the psychology of creativity, and many others. Such a broadened scope should promote teaching which favours the development of the independent activity of young people, improves their creativity, and prepares them for active participation in socio-economic life.

Certainly Polish higher education could benefit from the educational achievements of the other socialist countries as well as from a more rational use of its own educational achievements. Among the possibilities which are still not fully utilized one can cite an ample room for the introduction of new educational technology, the diversification of teaching methods, experimentation relative to new systems of educational path promotion, and many other educational innovations.

One barrier which is proving to be extremely difficult to surmount is the traditionalism, both in terms of thought and of action, which often characterizes some academic communities. They tend to remain very reluctant to introduce new methods of work and to enrich the contents of education even when certain staff members have publicly acknowledged a need for change. As the solution to the problems of teaching in Polish higher education must ultimately depend on the attitudes of the academic staff, the battle in favour of improvement must be directed at raising the levels of their educational motivations.

Apart from the above-mentioned endeavours, much attention has recently been paid to the problem of shaping study programmes into new organizational forms.

As a consequence of the differentiated tasks of the schools and the diversified contents of education, new forms of elective classes have been introduced quite extensively. These classes run a very rich gamut of teaching forms and methods. They include a number of lecture series and seminars, and various practical classes and specialized courses. It had already become possible in the 1970's for students to take up to 40 per cent of their class loads as electives. At present, the scope of elective classes and the proportion which they represent in student programmes vary from university to university even if all the universities support

the principle of choice. It should be added that electives are very popular with students.

One special form of studies are the so-called individual studies. Usually they are restricted to the most talented students; however, other student groups can become involved, particularly those, who for one reason or another, have to give up normal class participation. Individual studies are a form of self-instruction supervised by appointed tutors. This type of study may be chosen, for instance, by professional athletes who cannot systematically attend classes and by women students who are raising small children (however the latter case is rare).

Nevertheless, individual studies are designed primarily for the top students with high levels of aptitude and of scientific interest. Yet this form of study has not so far acquired the popularity that was anticipated. Only 0.5 to 1.0 per cent of all students are enrolled under this system. The major obstacle to its expansion appears to be the labour intensity of such courses requiring teachers to devote a great deal of time to supervision.

The above-mentioned forms which favour the individualization of education have already become a significant element in the organizational model of studies. Of another character and scope is a form of education known as sandwich or alternate studies.

In keeping with the name, alternate studies are an attempt at alternating studies with employment in industrial enterprises and administrative bodies. The formulae of these studies vary since the length and frequency of their periods of study and of work differ. Such studies were introduced experimentally 11 years ago in a few technical, agricultural, and economics colleges which were linked to several large enterprises. The results of the experiment have been quite promising and have testified to the great value of this form of study. The hope is that such studies will be expanded at least in certain types of higher education institutions.

The organizational endeavours which have been described, along with the more traditional organizational patterns of study offer a rich mosaic of solutions. They favour breaking with organizational schematism so as to facilitate the organization of courses of study according to the individual needs and capabilities of students.

6. EDUCATIONAL FUNCTIONS

The educational functions of institutions of higher education, both with regard to their contents as well as to their methods, are determined by many factors, namely:

— socio-political, economic, and cultural needs;

— knowledge which is created and transmitted in universities and colleges in association with individual and social consciousness, attitudes, views, ideas, values, and aspirations;

— individual needs and expectations of academic staff members, the level of development of their personalities;

— specific characteristics of academic institutions and communities which create the specific conditions of an academic education;

— modern and humanistic educational concepts.

The social need to perpetuate attitudes, convictions, and ideological-political views, as well as that of conveying and of developing the cultural heritage, are determined by certain fundamental directions given to education. The same is true of the need to prepare people to undertake tasks requiring a high professional calibre as well as personality values connected with responsibility in terms of work and of other activities.

The element of creativity in academic study requires constant development so as to better stimulate creativity on the part of students. The latter should be enabled to graduate with intellectual attitudes conducive to the undertaking of new tasks and the suppression of routine patterns of thinking. They should be further encouraged to reject ideas and values which do not square with reality, while at the same time not only responding to change, but predicting it if not programming it.

A creative preparation also implies the broadening of one's intellectual horizons and the imparting of innovative attitudes to social processes, particularly those in which one participates.

Parallel to the social need for higher education there are also individual needs and expectations on the part of people who want to satisfy their professional and educational aspirations through higher education. The people concerned seek course content which will help them create their own concepts of living and find responses to their cognitive needs and favour their efforts at self-fulfillment. These tasks have a direct impact on the cultural duties of academic institutions, particularly those directed at the young generation, and those intended to further the intellectual quality of society.

Given the scientific culture with which it is imbued and its educational vocation, academia seems also to be a proper arena for the introduction of new educational ideas and concepts of living, particularly through techniques of continuing education. Indeed, a group of problems generated by current life exists. It should find an immediate response in the contents of education. The group in question would include such matters as are associated with worldwide political and cultural problems as well as with regional problems on a local scale.

Individuals have put forth new needs and expectations. In the face of new problems, they expect directions, methods, and knowledge in order to solve them. As proposals for concrete actions, the following directive tasks of higher education have been formulated:

Higher education should accomplish the following tasks:

— convey and consolidate the system of ideas as well as general and national values:

— help in forming one's own system of values;

— shape ways of thinking in terms of scientific categories;

— tackle new problems and inspire openness in terms of attitudes and orientations;

— consolidate moral principles;

— teach professional ethics;

— stimulate participation in national and world culture;

— develop concern for one's personality, for character improvement, and for mental and physical fitness.

The main currents of higher education are as follows:

— the teaching of all subjects;

— research activity;

— student community life (principally that of learning groups, residence halls, self-government, and political organizations);

— the institutional activity of higher education, the level of its organization and management, the material infrastructure of student communities;

— the influence of the socio-political and the cultural environments of higher education institutions;

— the work of academic staff members;

— the participation of students in education;

— the relationship between social learning and higher education.

The target-oriented organization of the contents of teaching and of education itself develops views, rationalizes convictions, and meets cognitive needs. In the best of possible ways, it also facilitates the interests of students. It should stress curricular elements which directly shape views and convictions, as well as organizational abilities, intellectual and work levels, and levels of erudition.

Socio-political disciplines provide the basic forms of ideological-political education. They develop the ability to recognize and to interpret socio-political facts and phenomena on the basis of comprehensive and methodological knowledge as well as the ability to assess both in historical and dialectical terms. While studying these subjects, students gain knowledge about the goals and conditions of their future careers as well as the basic ethics of their professions.

Student independence is properly manifested in partner-like co-operation with academic staffs both through course work and when carrying out research.

The methodology of academic education postulates that teaching and learning should be closely associated with real-life situations and practice.

Effective forms of education that comply with the above-mentioned postulates would include:

— M.A. theses on subjects connected with the family environments of students and their future professional work including references to the problems of local communities (e.g. history of localities, local names, and laboratory design);

— student practice guided by young teachers; so-called study tours, including visits to specialized enterprises and important historical sites; for teachers and educators, visits to vocational schools or to the so-called schools of living;

— linking the teaching/learning process with the concrete problems of communities: e.g. educational care for children from child shelters; medical care for children from provincial schools; co-operation with folk artists and working class culture teams; technical care for combined vocational schools.

Another form of education is constituted by the science clubs in universities and in colleges. These permit the accomplishment of independent and/or group tasks. So-called teachers' schools organized during vocation periods represent a developing form of teacher-student co-operation for research. Here and in the so-called science camps, teachers and students can discuss educational problems.

Student self-government is another way whereby the educational process is amplified and linked to the growth of student self-responsibility. The principle of self-government is developed in the student residence hall councils, the campus councils, the arbitration tribunals, and the sports and the tourist movements. Youth organizations play a special role in academic community life. They include ideological-political organizations, social organizations, and student associations set up in order to achieve common goals. The development of youth organizations implies the consolidation of political organizations (Polish Socialist Youth Union, Rural Youth Union), the expansion of the social organization (Polish Students' Association), the further development of the professional clubs, the young teachers clubs, the innovations clubs, the literary-scientific clubs, etc.

The organization of the educational process is given support by research on the opinions and convictions of students relative to their schooling, their future work, and their aspirations and life plans. Larger or smaller research teams made up of members drawn from the universities, organizations existing in each institution, are engaged in the study of these problems. Syntheses of current knowledge about students are prepared and published by the Institute for Science Policy and Higher Education. This institute also conducts studies covering the entire student body of Poland. An interesting form of research involving young academics in support of the scientific organization of the educational process takes place in studies which are conducted by education students for young academic teachers. These studies deal with the educational environment in student residence halls, social relations in learning groups, student interests, and the like.

Teaching staff members are and will continue to constitute the principal educational resource of higher education. The role of teachers as organizers of

the learning and research processes as well as the animators of the active participation of students in these processes is irreplaceable.

A fundamental role in education is played by the scientific, social, ideological, and moral quality of each institution, its organizational and functional order, its participation in community culture, etc. "School quality" is an important factor in shaping the convictions and the attitudes of students. The shaping of the personalities and the development of human beings is fullest when it takes place through their own efforts, through the accomplishment of difficult tasks in response to given needs. Education should assist this process through the diversity of its contents and of its learning situations, shaping and inspiring needs of a higher order and offering valuable choices and answers to the human quest for a sense of life.

7. POSTGRADUATE EDUCATION AND REFRESHER COURSES

A full programme intended to translate the concept of lifelong education into concrete undertakings, leading to a uniform and internally cohesive system for the upgrading of professional qualifications, is now being prepared in Poland. Postgraduate studies for people who have completed a final degree constitute one of the forms of this system.

The Law on Higher Education provides that universities and colleges offer postgraduate and special courses. In addition to this provision, the Council of Ministers adopted a resolution (No. 263 of December 23, 1982) to the effect that employees of large industrial and administrative establishments may upgrade their qualifications by enrolling in full-time, evening, extramural, or distance education courses, or a combination of all these. The same resolution defines the types of employment posts which would require that their incumbents follow regular refresher courses. The regulation refers to posts decisive for scientific, technological, organizational, and economic progress as well as labour safety and hygiene. A list of jobs for which upgrading is compulsory, the frequency of the required retraining, and the forms of the courses in questions are set by the employer.

Postgraduate studies constitute an integral part of the study programmes organized by higher education. They encompass a wide scale of courses; their curricula can be implemented by the most adequate of teaching methods. Postgraduate studies organized by universities encompass almost all problems and fields of technology, the natural sciences, the humanities, and the social sciences.

Postgraduate studies in Poland are organized in three ways: extramural, evening, and full-time courses. Depending on the organizational form as well as the contents and scope of training, the length of these studies varies from one to four semesters. The vast majority of students enroll in two-semester courses. This programme takes from 200 to 400 hours, of which 30 to 40 per cent are given to lectures, 10 to 20 per cent, to laboratory classes, and the remaining time, to exercises and seminars.

The first postgraduate courses were set up in Poland, in 1957. Since then, both the number of students and the number of universities offering advanced work have increased. The most intensive development of postgraduate education took place in the 1970's. From 1970 to 1980, the number of postgraduate courses increased 2.2 times. With regard to individual types of universities and colleges, the rate of growth of postgraduate studies has varied. Thus in universities the number of courses increased 3.5 times; in teacher training schools, 2.3 times; in technical universities, 2 times; in economics academies, 1.9 times; and in agricultural academies, 1.4 times.

Of the total number of postgraduate courses offered in 1980 (533 courses), over one-half of them were held at technical universities; over one-fourth, in universities, while the remaining number, in economics academies (10.3 per cent), agricultural academies (9.2 per cent), and teacher training institutes (3.4 per cent).

The number of courses held under the extramural and full-time systems has increased considerably over the decade under analysis, while the number of evening courses has declined. In 1980, extramural postgraduate courses constituted 66.6 per cent; full-time courses, 22.0 per cent; and evening courses, 14.4 per cent of all the postgraduate courses offered in the country.

During the 1973—1978 period, the number of students enrolled in postgraduate courses was more or less on the same level and amounted to some 11,000 annually. The year 1979 withnessed a further growth in this number which attained the record level of 13,721 students in 1980. In 1981, however, the total number of students decreased considerably. In 1984, the total postgraduate enrollment in Poland rose again to 13,643 (38.7 per cent enrolled in universities, 21.7 per cent, in technical universities, 10.6 per cent, in academies of economics, 12.4 per cent, in higher pedagogical schools, and 9.8 per cent, in agricultural academies). These figures moreover represent a shift in postgraduate enrollment patterns according to type of institution. In the teacher training schools, the proportion of postgraduate students increased from 1.5 per cent in 1971 to 12.4 per cent in 1983 and in the universities, from 29.5 to 38.7 per cent. Their proportion declined in the technical universities from 37.1 to 21.7 per cent and in the academies of economics from 20.0 to 10.6 per cent. Their proportion in the agricultural academies registered a smaller decrease from 11.5 to 9.8 per cent.

The unfavourable phenomenon of a decrease in the number of postgraduate students was caused by the austerity measures taken by industry and the various administrations. As a means to effect short-term savings, such tendencies are in a sense understandable, but they are unacceptable in the long run, for they stand to hinder the correct development of the national culture and the economy. Thus they must be vigorously counteracted.

With the development of postgraduate studies, the numbers of alumni have also grown (from 2,703 students in 1971 to 7,967 in 1980 and 7,330 in 1984). It is estimated that at the end of 1984, over 100,000 employees had completed postgraduate studies of varying sponsorship, a number which accounts for over 8 per cent of the total number of employees with higher education qualifications.

A novelty so far as postgraduate education is concerned was the establishment in 1983 of a teaching and research facility called the Centre for the Postgraduate Education of Civil Servants, which is supervised by the directorate of the Office of the Council of Ministers. Postgraduate studies offered by the Centre are full-time courses lasting for three semesters, the final semester being devoted to practice. Students receive unpaid leave from their employers while attending courses.

Physicians and pharmacists as well as engineers benefit from a separate system of very high quality postgraduate education.

Despite its many achievements, many shortcomings have been registered in the area of postgraduate studies. For example, the proportions between basic and specialized subjects are quite frequently inappropriate; subjects already covered in undergraduate programmes are being repeated. Too little attention

is devoted to links with practice. Little attention is paid to the latest achievements of science and of technology. Many courses have been narrow and overly specialized. The feeling is that programmes which can enrich the basic knowledge of students, stimulate their creative abilities, and prepare them for independent conceptual work should be expanded. Postgraduate studies cannot be limited to conveying information and prompting ready-made solutions but should promote habits and abilities which are conducive to independent activity and permanent self-education.

The economic reforms which have been implemented in Poland and the directions and changes stemming from them require that all the educational and supplementary training institutions adapt themselves to a new situation. The social, legal, and economic disciplines and sciences are particularly concerned. Although changes in their curricula will take effect in the future, adequately prepared personnel are required immediately. Given this situation, it is necessary to rapidly prepare a broad programme aimed at training specialists of all sorts and upgrading their qualifications. Both the academic staff members of higher education and experienced executives and leading civil servants should be used in this endeavour.

The importance given to all forms of postgraduate education in Poland has also been confirmed by national and international conferences devoted to the problems discussed above. The Sixth and the Seventh Conferences of Ministers of Higher Education of the Socialist Countries authorized Poland to organize international co-operation in postgraduate supplementary training of personnel with higher education qualifications. As a result of decisions taken at these conferences, international seminars of experts devoted to postgraduate education have been held.

8. ADULT EDUCATION

Adult education programmes occupy an important place in the system of higher education in Poland. They permit a regular flow of graduates into various branches of the economy and the national culture, and they also increase the percentage of students from working class and peasant families in the social composition of the student body. In addition, the study programmes in question provide good opportunities for institutions to exercise direct influence on the functioning of industry and administrations and thus stimulate the modernization of the methods and the organization of labour.

From the moment of its introduction, that is, since 1950, this method for the acquisition of higher education qualifications has been developing dynamically. The following statistical data illustrate the quantitative growth of worker-study programmes. During the 1950—1951 academic year, there were 7,600 worker-students enrolled in study programmes of one kind or another. By the start of the 1974—1975 academic year, the enrollment of worker-students had increased to 168,600 thus making up 39.5 per cent of the total number of students. However, as of the 1975—1976 academic year, the number of worker-student enrollments has been declining in proportion to the general drop in enrollments in higher education. During the 1984—1985 academic year, there were some 81,000 enrolled worker-students who collectively composed 23.3 per cent of the total number of students.

From 1945 to 1984, 431,290 students in worker-student programmes graduated from higher education. They accounted for 27.3 per cent of the total number of graduates. In other words, almost one-third of the Polish higher education graduates received their training in courses specially designed for working people.

At present, in Poland, almost all types of higher education institutions organize extramural, evening, and extension courses. The overwhelming majority of working students, however, (88.8 per cent during the 1984—1985 academic year) attend extramural courses. A much smaler number, 9 per cent, attend evening courses, and only an insignificant percentage, 2.2 per cent, attend extension courses. Thus, extramural courses constitute the dominant form of higher education for working people.

As for the types of institutions which have most attracted worker-students, we note that during the 1950—1951 academic year, the largest number of them, 66 per cent, enrolled in technical schools. Academies of economics attracted 14.8 per cent; teacher training schools, 13.6 per cent, while universities enrolled only 5.6 per cent. Over the following 30-year period, the proportion of such students attracted to universities, agricultural academies, teacher training schools,

and academies of physical education has been significantly smaller than that attracted to technical schools and academies of economics. During the 1984—1985 academic year, 36.1 per cent of the worker-students were enrolled in universities; 17.1 per cent, in higher technical schools; 18.7 per cent, in pedagogical schools; 10.8 per cent, in agricultural academies; 7.1 per cent, in academies of economics; and 4.1 per cent, in academies of physical education. The remaining worker-students constituting between 0.4 to 1.8 per cent of the total were enrolled in other types of institutions.

During the same academic year, 1984—1985, the proportions of worker-students by type of institution to the total number of students enrolled in Polish higher education were as follows: 40.9 per cent, the largest component, of the enrollments of the pedagogical schools, 29 per cent of the enrollments in physical education; 27.5 per cent of the enrollments of the universities; 22.7 per cent of the enrollments of the agricultural academies; 17.1 per cent, of those of the higher technical schools; 15.4 per cent, of those of the higher schools for the arts; and 1 per cent, the smallest proportion, of the enrollments of the medical academies.

Study programmes for working people occupy a special place in the Polish system of higher education and contribute considerably to its democratization. The statistical data on the social composition of worker-students indicate that the vast majority of them come from working class and peasant environments. At present, worker-students account for 63 per cent of the adult education enrolment but only for 38 per cent of the full-time enrollment. During the 1984—1985 academic year, students of working class origin constituted 31.9 per cent and those of peasant origin, 6.9 per cent of the full-time first year enrollments.

The same two social groups constituted 47.6 per cent and 15.6 per cent, respectively of the enrollments in extramural courses and 60.0 per cent and 1.8 per cent, respectively, of the evening course enrollments.

The high percentages of persons of working class and peasant origin enrolled in study programmes for workers is proof that these programmes promote the realization of the educational aspirations of these social strata which have been insufficiently represented in full-time courses.

The steady growth of the share of women in higher education which has been observed for many years has been stimulated by the considerable feminization of the pupils in the general secondary schools. However, the enrollment of women was considerably higher for worker-study programmes than for regular programmes. The proportion of women enrolled in specific forms of educational programmes varies. Women make up about 55 per cent of the enrollments in extramural courses; 45 per cent, in extension courses; and only 20 per cent in evening courses.

The selection of candidates for workers' courses was initially limited to persons who, for various reasons, had not been able to study during the inter-war period and during the war. Indeed, it was for them that opportunities for acquiring higher education without interrupting professional activity were chiefly created. An intensive development of studies for workers filled the educational gap very quickly. A change in the enrollment policy for these programmes that has occured over the past 15 years has been the lowering of the minimum enroll-

ment age, a measure justified by the fact that the vast majority of present-day worker-students were born long after the war.

Along with the reduction of the minimum age required for enrollment in worker-study programmes, the required interval between secondary school graduation and enrollment has also been reduced. It now stands at two years.

It is also interesting to note that for economic and social reasons, certain potential candidates for full-time studies choose worker-study courses. According to statistical data, one out of four such students choose this path. Thus, to a considerable extent, these studies cater to the same social groups as regular full-time studies.

Above and beyond the general downward enrollment trends prevailing in Poland since the 1971—1977 academic years, the decline in worker-study enrollments has been much greater. If in 1981 the total number of first-year students declined by 33.2 per cent as compared with the figure for 1975, the decline registered for full-time courses was only 20.3 per cent while in worker-study courses it was as much as 54.8 per cent.

During the 1984—1985 academic year, the number of first-year students enrolled in worker-study courses amounted to 11,098, thus contributing 16.4 per cent of the total number of first year students enrolled in higher education in the country. The overwhelming majority, as many as 96.8 per cent, 10,738 people, were first-year students enrolled in extramural courses. Students in evening courses accounted for only 360 persons, 3.2 per cent of the total enrollment.

The regular decline in the numbers of persons undertaking education in institutions providing part-time studies has been caused by the following sets of circumstances:

— the shrinking of the student recruitment base in industry and in the administration;

— the elimination of the enrollment system known as delegated recruitment, that is, recruitment without a required entrance examination;

— the tendency in factories and in offices to limit secondments for purposes of study on the grounds that student-workers are considered to be of reduced effectiveness as workers during their periods of study.

One should also consider that currently, the choice of evening, extramural, and extension courses is governed by totally different motivations than in the 1950's or even the 1960's. In general, young people under 30 years of age, who are not much older than those studying full-time, make up the majority of worker-students.

The drop of interest of young people in university studies may be linked to the fact that their generation now wishes to become economically independent earlier than was the case in the past. Indeed, the completion of full-time studies only does not lead to significant immediate economic benefits but it delays the acquisition of material-financial independence. The socio-occupational and demographic changes which have taken place in the past in the group constituting the potential candidates for worker-studies have caused a narrowing of the recruitment base for these studies.

A positive effect of the recent economic reform which led to the independence and the self-financing of enterprises has been the rationalized selection of persons seconded for studies. Now such secondments must serve the real needs of the

employers. So-called direct recruitment, abolished in 1981 (except in teachers' courses), did not pass the test since frequently extra-merit and extra-occupational reasons determined the choice of candidates for studies.

Also, the future prospects of worker-study courses must contend with the fact that in the years to come enterprises and offices will be able to count upon a considerable inflow of graduates having completed full-time courses, probably some 50,000 persons annually. Even now, the demand for specialists with higher education qualifications is lower than the current graduate output. Nevertheless, one should not lose sight of the individual needs and wishes of those workers who want to study in order to fulfil their aspirations and interests, even if the latter are not directly associated with the needs of employing enterprises.

The changed socio-economic situation of the country (implementation of economic reforms, reforms in the graduate employment system, etc.) have required that higher education for workers be seen in the light of changed circumstances. Efforts should be made to synchronize the numbers of people educated in this system with the demands of the national economy; individual educational needs could be satisfied through a broadly conceived lifelong education system.

At present, another important need is to meet halfway the demand for non-formal education, that which is not directly linked with the socio-economic parameters of education. An attempt to satisfy this need has been the setting up of an Open University in Poland. It will open its doors in the near future. Open universities have been operating in the world for the past dozen or so years. In Poland, studies of the possibilities of distance education have been under way for several years. The team which conducted these studies reached the conclusion that it would be unwise under present conditions to imitate forms of education which already exist elsewhere in Poland. Therefore, the aim of the Open University would be to provide learning based on the principle of general higher education.

Earning a diploma in the Open University will depend on the award of credits for a set of required subjects as well as on the writing of a thesis. It has already become obvious that the Open University is destined to be an attractive form of education which will expand the availability of advanced educational offerings. Its development will become an important element in the further democratization of higher education as well as a significant factor in the modernization of the teaching-learning process at this level.

9. STAFF DEVELOPMENT

Between 1960 and 1980, the higher education instructional staff expanded almost three-fold (295 per cent). The so-called scientific cadres* experienced an almost identical rate of growth (289 per cent). The net growth in the numbers of employed scientific cadres during this period amounted to 30,586 persons.

A particularly significant growth in the numbers of all academic teachers in higher education took place during the first half of the 1970's and was connected with the increased numbers of students. Between 1970 and 1977, the total instructional staff expanded from 32.3 thousand to 53.2 thousand persons, and the number of professors and assistant professors, from 5,949 to 8,047.

Since 1978, the numbers of students have been declining (the number in 1985 was 28 per cent smaller than in 1978). This decline has had an effect on the employment of teaching staff members. Their rapid expansion over a number of years slowed down considerably in the late 1970's, and has remained stable over the last five years. Given the decline in student numbers, the result in general has been an improvement in the teacher-student ratio which stands to have a favourable impact on the quality of education (see also Annex, Tables 13 and 15).

The high tide of the growth of scientific cadres over the 1965—1975 period has by now reached the posts of adjuncts raising the numbers of persons employed at this level out of proportion to the numbers of assistant professors and senior assistant lecturers. In the next few years (by 1990), this wave will have reached the assistant professor level considerably enhancing the proportion of this group of professors in the total number of scientific cadres. In 1984, this group amounted to only 19.3 per cent of the total number of scientific cadres (15.6 per cent of the total academic staff). This bulge in the curve has been the result of rapid growth in the overall numbers of academic teachers throughout the post-war period, but particularly during the 1970's. Given the expanded number of tasks to be attributed to higher education in the 1990's, another expansion in the employment of instructional staff members is predicted, but one which will be smaller than the expansion of the early 1970's.

A statistical assessment of the personnel situation in higher education from the point of view of needs reduces the analysis to two indices: the relation be-

* According to Article 130 of the Law on Higher Education of 4 May 1982, Dz U. No. 42 of 14 September 1985, the term *academic teacher* denotes three categories of workers: scientific-didactic, didactic, and scientific workers. The term *scientific cadres* used here applies to workers employed in posts of: professor, assistant professor, adjunct, senior assistant lecturer, and assistant lecturer.

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tween the number of students and 1) the number of professors and assistant professors, and 2) the number of academic teachers (not counting lecturers, instructors, and certified librarians) (see Annex, Tables 12 and 14).

Indices of this kind for specific types of higher education vary quite considerably. As compared with the situation in 1970, the index of the number of students per professor and assistant professor declined bymore than twelve points in universities and higher technical schools; it remained practically unchanged in higher pedagogical schools; it increased slightly in academies of economics; and it increased markedly in agricultural academies. The index of the number of students per academic teacher decreased in all institutions, particularly in the academies of economics, the teacher training institutes, and the higher technical schools.

Research carried out by the Institute for Science Policy and Higher Education shows that the optimization of the number of students versus the number of specializations offered to them can reduce the outlay of instructional work per student in individual institutions by as much as 30 to 40 per cent. It can generally be stated that the smaller the number of students in a given specialization or even a given school, the more effective the teaching per student becomes, in particular as concerns the delivering of lectures, the conducting of graduate seminars, etc., by the most highly qualified teaching staff members. It has also been observed that the introduction of new instructional methods which activate the participation of students in the learning processes tends to increase the volume of instructional work.

The improved qualifications of academic staff members should have a favourable effect on the quality of education. In the past few years, the number of doctors' degrees obtained annually in Poland has amounted to over 2,500 out of which 2,000 were obtained by higher education employees. In the course of training future scientific cadres, the percentage of scientific-instructional workers holding advanced degrees has increased in the past four years, from some 45 to some 52 per cent. Nevertheless, the number of habilitated doctors' degrees, has been growing at a slower rate. According to the law on higher education, the earning of this degree is a precondition for appointment to assistant professorships and professorships. On the average, 500 persons per year earn the habilitated doctorate in Poland. Of these, 400 are already employed in higher education. The percentage of academic teachers employed in the past several years as professors and assistant professors has been around 15 per cent (see Annex, Table 15).

At present, the training of cadres already holding doctorates is primarily carried out in Poland through various types of assistantships.

Doctoral training courses themselves were set up in 1968 as a way to improve the training of scientific cadres. Such courses were similar to the former aspirant studies (three-year periods of studies, scholarships, a core curriculum). They were designed not only for the training of academic staff members but were also made available for other categories of working personnel, especially those in management, in which a need for more doctorate holders was felt. The effectiveness of the new courses turned out to be lower than originally assumed. Given these conditions and taking into consideration the already large number of cadres holding doctorates, a decision was taken in 1982 to suspend recruitment for doc-

toral studies. In 1985, an amendment to the law restored doctoral studies in institutions of higher education.

The need to ensure a constant flow of young cadres into higher education and to elaborate a correct employment policy requires the elaboration of principles and criteria for the recurrent evaluation of the performance of academic teachers.

The amended law on academic degrees and titles (Dz. U. 1985, No. 36, Article 169) is intended to ensure that the scientific value of degrees is maintained and to raise the requirements for admission to degree courses. Candidates for posts of adjunct and assistant professor will be required not only to hold an appropriate academic degree but to have obtained the degree by having written a distinguished thesis based on research.

The proper geographical distribution of academic staff members is linked to the maintenance and development of many "young" higher education institutions which have been established in centres with no previous academic traditions. In spite of the relatively short distances between "old" and "new" centres of higher education, the processes of transferring academic staff and levelling off disproportions in this respect have encountered and continue to encounter great opposition.

The need, therefore, to stimulate the mobiliy of cadres and to transfer them to the centres in which there are shortages remains. Steps aimed at increasing the mobility of science cadres were taken in the late 1970's. These, however, proved to be insufficient. More effective solutions will have to be sought.

10. THE STUDENT COMMUNITY

During the 1984—1985 academic year, there were a total of 350,000 students in Poland at the level of higher education. These accounted for nearly 12 per cent of Polish youth aged 19 to 24 but only 1.6 per cent of the population of productive age. Nevertheless, public interest in the student community is fully justified, both owing to its place in social life and its size. There are almost as many students as there are employees in the coal mining industry. Their number is roughly equal to 3/4 of that employed in the textile industry. Both of these occupational groups exert an enormous influence on the economic and social life of Poland. Can it be the same with students?

Students, particularly those enrolled in full-time courses, belong to a definite age group. Three-fourth of them are 19 to 25 years old. In the opinion of certain sociologists, students most fully comply with the definitional characteristic of youth: they have already attained biological maturity but are still not independent economically and socially because they are provided for by parents and the state (scholarships), and their activity consists mainly in preparing themselves for future social and professional roles. Thus, the main characteristic of students is their transitional character.

During the 4 to 5 years that students are studying, the university conveys varieties of information and skills to them and makes possible their utilization of this transitional period in such a way that their adult life will match their individual and social expectations. In spite of the transitional character of the social category of students, the individuals concerned remain in a close-knit community for a few years with intensive forms of interaction and co-existence.

10.1. Students in Institutions of Higher Education

The student community is very diversified. To begin with, it is divided between full-time students and part-time working students.

Full-time students can be classified by type of institution and by course of studies (see Annex, Tables 2a and 2b).

Surveys indicate that the style of learning of students is not only closely linked with the courses of studies which they choose but is also closely connected with motivations for studying, relations with faculty members, and with the professional prospects of given courses. The most positive attitudes prevail in courses in the sciences and the humanities as well as in medical studies. In the first case (natural sciences and the humanities), a positive attitude is associated with a

pessimistic assessment of professional prospects and a high assessment of relations with the staff; in the last-mentioned case, medical studies, an optimistic assessment of professional prospects is associated with a critical assessment of staff/student relations.

On the other side of the scale, negative attitudes toward learning and lack of interest can be encountered in the cases of students enrolled in certain technical and economic courses. Some of the reasons for this situation are as follows: dissatisfaction with the programme, low opinion of the staff, low prestige of the future profession, and mostly, utilitarian motivations for studying.

Thus every school, department, and faculty is characterized by a specific cluster of social and psycho-social characteristics. Sometimes these characteristics are clearly discerned and felt by the students and by the staff. Various forms of co-operation and activity may favour and help consolidate the tradition. From this point of view, departments with a great number of students and overburdened programmes tend to provide unfavourable conditions for studying and for developing scholarly interests.

As has already been mentioned, learning styles are associated with motivations for study. Obviously, interest in a given discipline or future profession is a dominating factor. Indeed, this motivating characteristic underlies the diversification of faculties. Recent inquiries have also underscored the existence of secondary motivations, particularly the desire "to prolong youth" and the desire "to be a student".

The everyday life of a student is determined by his presence in class from twelve to almost sixty hours per week (depending upon his faculty and his year of studies). It is further punctuated by credit and by examination periods.

Students complain justifiably that they are overloaded with courses of a secondary school nature, that courses requiring practice and the solution of scientific and practical problems are underemphasized. As a result, students frequently earn only mediocre marks. It is worth noting that students will nevertheless evaluate their teachers in positive terms even while criticizing the organization of courses, libraries, and the functioning of the administration. We conclude, therefore, that the expectations of students in regard to higher education deserve support: students want to study according to the best university traditions. Most students seem to have an above-average interest in studying; their motivations, as revealed through survey, are quite differentiated.

The ideal students tend to be found among the winners of school olympiads who were exempted from the entrance examination. They are students who know how to study and to learn. They usually earn very good marks, especially in their chosen disciplines. They participate in non-compulsory classes and involve themselves early in research. They read specialized books and journals. At the same time, they have a critical attitude towards the course programmes and the lecturers.

Another group of first-rate students are those who have been seconded for university studies by their schools. Unlike the first group of students, this group does not seem to have much scientific independence even if its members do accumulate good marks.

At the other extreme, we can identify a type of student who does not even try to earn good marks. He believes that it is best to pass through studies without any major effort or trouble. He values "being a student", experiencing this period

without intellectual strain, but with considerable involvement in various forms of collective life. It seems that in this case prestige motivations serve to induce study; that is, the student is motivated to earn a diploma bringing with it a higher social status, rather than to gain knowledge for its own sake.

10.2. Living Conditions of Students

Students receive support from three sources: scholarships, parental assistance, and their own gainful work.

During the 1984—1985 academic year, scholarships were given to 32 per cent of the students. The value of a given scholarship depends, on one hand, upon cost of living levels, including expenses related to room and board in student residence halls, books and paper, and participation in culture, and on the other hand, on family earnings. Therefore, a principle has been adopted that the purpose of state assistance is to complement the family's share. In effect, the cash values of scholarships are differentiated. Significantly, less than 10 per cent of the scholarships awarded are funded by future employers (referring particularly to technical, medical, and agricultural schools).

It is difficult to measure the assistance given in money and in "kind" to students by their parents. Surveys carried out in the 1970's indicated that it was insignificant in terms of money given but significant in terms of "kind".

Students also work after classes in order to obtain additional money. A common form of work is piecework, obtainable through student cooperatives. These jobs are frequently menial and hard but are well paid. Students also work frequently during their vacations as camp masters or as paid assistants in scientific research (as interviewers for instance). Finally, some students obtain unregistered employment as private tutors, or they may do odd jobs in private crafts and in trade. Surveys carried out in the 1970's indicated that some 40 per cent of students worked in some way. Perhaps it is the "new ways" that cause difficulties in completing studies. A temporary odd job and student status provide a more favourable material and psychological situation than starting a professional career with all its advantages and burdens.

Some 65,000 students take their meals, usually dinners, in cafeterias. However, the student cafeterias are not very popular. Surveys carried out in the 1970's demonstrated that students nourished themselves sufficiently although not always regularly.

A considerable number of students live away from their family homes in residence halls and in rented rooms. During the 1984—1985 academic year, some 40 per cent of students lived in 385 residence halls, while about 15 per cent rented rooms in private lodgings. The quality of residence hall accommodations, it should be stressed, varies greatly from one academic centre to another, as does the number of places available.

The place of residence in many respects diversifies the student population. Surveys show that out-of-town students from working class families and from families, the breadwinners of which are teachers, tend to live in student residence halls. Those from better-off families, particularly those linked to the intelligentsia,

prefer private lodgings. The latter are expensive, particularly in the large cities, and do not always provide proper conditions for studying.

The variations in the material situations of students depend upon such factors as places of residence, but they encompass all elements: family affluence and the scope of family assistance, amount of scholarship, assistance, state of student hostels and cafeterias, and opportunities for obtaining employment. The solution of problems related to the material situation of students is subject to state and school regulations and directives. A major role is also played by student organizations encompassing the distribution of allowances, self-government in the student residence halls, consultations about and requests for state benefits of varying amounts — those granted to individual students as well as those which are linked to social investments for students, student residence halls, cafeterias, health services, etc.

10.3. Foreign Students

Foreign students have been enrolled in Polish higher education since 1950, but their numbers have been rather small. Only the 1980's have witnessed a growing trend in this respect. The basic goals of education of foreigners are described as follows:

— effective use, within the framework of the CMEA countries, of the possibilities of division of labour in the education of highly qualified specialists;

— assistance to developing countries in their efforts to shape the formation of their national intelligentsias, and to create personnel potential for scientific, technological, and economic development. The education of citizens of Third World countries should in this way contribute to the creation of a new international economic order by stimulating conditions in those countries favourable to the development of other forms of long-term, mutually beneficial, co-operation with Poland;

— cultural exchanges with countries having different socio-political systems;

— dissemination of accurate information about Poland: its achievements, its history, its culture, and its science, thus raising the international prestige of the country. Of importance here is the education of foreign students of Polish origin, which is a form of assistance to the Poles living abroad and at the same time a contribution to the consolidation of their ties to the country.

During the 1984—1985 academic year, there were 4,273 foreign undergraduate students and 1,116 foreign postgraduate students studying in Poland. The plan is to double these figures by the end of the present five-year period.

The basic forms of education in which foreigners are involved are as follows:

— full M.A. studies;

— supplementary studies;

— Ph.D. studies;

— fellowship supported short-term and qualification-raising courses.

M.A. and Ph.D. studies are the most popular programmes among foreigners.

The geographical composition of foreign students in Poland has significantly changed since 1980. The number of students coming from the European CMEA countries has markedly declined, but this decline has been accompanied by an

increase in the number of foreign students from Third World countries, with the result that the latter represent the majority of foreign students (more than 70%). Students from Asia form the largest group. Some 20 per cent of the total number of foreigners studying in Poland are citizens (most of them of Polish origin) of advanced capitalist countries. Among the youth from socialist countries, the vast majority come from non-European countries.

Foreign students are studying in all the disciplines taught in Poland. Students from the socialist countries tend most to be enrolled in technical colleges (some-40%) and in universities (including academies of economics and higher pedagogical schools, representing some 35%). Students from the developing countries are enrolled mostly in the technical (some 40%) and the medical disciplines (30%). Students from the advanced capitalist countries are mostly attracted to medical studies (some 45%) and to university studies (some 35%). The study specializations of foreign students are selected by the students themselves or by the educational authorities of the countries from which they have come.

The education of foreigners in Poland is carried out on the basis of bilateral agreements on cultural co-operation and follow-up programmes. As regards the financing of the studies of foreign students, one can distinguish four categories of foreign students:

— holders of scholarships awarded by the government of Poland;
— holders of scholarships awarded by socio-political organizations;
— persons studying at their own expense or that of delegating authorities;
— foreigners studying without the benefit of any Polish subsidies.

About 30% of the foreign students in Poland are paying fees in hard currency; however, the charges are much smaller than the real costs or than comparable fees in other countries.

Foreigners are accepted for higher education without entrance examinations (except for students in artistic and in physical education courses). The criteria for enrollment are the marks earned in secondary school. Once accepted for studies, foreign students are sent to a language school for a one-year course in the Polish language. In addition to language instruction courses, they also attend introductory classes in principal subjects in their chosen lines of study. The successful completion of the Polish Language course is the basic condition for entering the first year of studies. Foreign students follow the same curricula as Polish students (see Annex, Table 10).

11. RESEARCH IN HIGHER EDUCATION INSTITUTIONS

The second half of the 1970's witnessed a significant increase in the volume of research undertaken in higher education establishments. In 1975, 59 institutions out of a total of 89 were conducting research and development activities. In 1976, the figure had increased to 70, and in 1980, to 79 (albeit in 1980 the total number of institutions had increased to 91). Also, the number of staff-members participating in this activity grew from 19 thousand in 1975 to over 45 thousand in 1980, that is, 95.2 per cent of the total number of scientific workers employed in higher education.

The development of funding was greatly intensified during the same period. The rate of growth of the costs connected with activities related to research and development was much higher than the rate of growth of staff employment.

The scope of the research conducted by Polish higher education for the Polish national economy can be assessed in terms of the number of projects adopted for application in production. In 1975, higher education contributed 7,100 projects to the national economy of which 1,700 (24 per cent) were effectively used in production. In subsequent years, the number of projects contributed declined markedly. In 1984, 3,566 projects were turned over, whereas only 337 (9.5 per cent) went into production. The share of applied projects prepared by research institutions was considerably larger during the 1976—1980 period, oscillating around 63 per cent. The figure was even higher, 84 per cent, in the case of the development centres.

University scholars are primarily interested in basic research. It is interesting to compare the structure of the costs of research carried out in the R&D centres of selected branches of the national economy in 1984 (See Annex, Table 21).

R&D activities concerning industry are geared primarily towards development work (over 84.1 per cent of total costs) and to a much lesser degree to applied research (15 per cent of total costs). Basic research is given minimal importance (less than 1 per cent of the total costs). In the remaining selected branches of the economy, the majority of costs are concentrated on basic and applied research.

Universities and colleges have engaged a considerable portion of their research potential in the implementation of so-called major research programmes. Over 56 per cent of the costs of all projects executed in 1980 by higher education were connected with the realization of projects envisaged in centrally controlled programmes. These projects were of three sorts: government sponsored programmes, key problems, and ministerial-branch problems. The share of higher education in the implementation of these programmes was 17.6 per cent, 17.2 per cent, and 13.5 per cent, respectively.

Since 1981, research-development activity in higher education has slowed down considerably for the following reasons:

— the socio-economic crisis loosened some of the ties arising from co-operation between higher education and enterprises of the socialized sector of the economy;

— raw material and equipment shortages limited the possibilities for implementing research tasks in universities even when the funds for these purposes were available;

— hard-currency shortages halted many projects requiring imported equipment, raw materials, and intermediate products; in addition, the suspension of subscriptions to scientific journals was a blow to basic research.

Nevertheless, research continued and even expanded in areas of basic research and with regard to projects connected with the training and the upgrading of scientific cadres.

The participation of higher education in the entire R & D sphere in Poland during the 1980—1984 period can be presented as follows: with regard to total outlays for (R & D) projects, the participation of higher education was 20 per cent in 1980 and 16.1 per cent in 1984. The share thus allotted to research and to development projects pursued by higher education in 1984 was 25 per cent and 8 per cent, respectively. At the same time, the proportion of the R & D work allotted to the Ministry of Science and Higher Education which was accomplished by the universities and colleges subordinated to it amounted to over 90 per cent in 1980 (98 per cent in 1984). As for investment outlays for R & D work, the portion allotted to higher education was 35 per cent in 1980, and 34 per cent in 1984. On the other hand, the R & D potential in terms of higher education personnel is considerably greater. In 1984, the universities and colleges employed some 70 cent of the scientific workers of the country, including 76 per cent of its professors and 73 per cent of its assistant professors. The academic libraries of the universities and the colleges housed 71 per cent of the volumes of the entire network of scientific libraries in Poland. The equipment potential of universities and colleges is also considerable amounting to 45 to 65 per cent of the total available research equipment.

We are of the opinion that the research potential of higher education institutions should be better utilized, particularly to further the aims of economic reform.

The first need in this respect, therefore, is to concentrate efforts on certain key aspects of government-sponsored programmes: food production, energy conservation, development of exports (including exports of scientific-technological achievements and services), and problems of environment protection and public health.

It follows therefore that R & D work must be critically reviewed and specific problems tackled in order of urgency. Overcoming the current crisis is a top priority. Already in 1982 the share of projects implemented in an effort to solve key interministerial and ministerial problems increased. However, outside the framework of central planning, institutions should co-operate with the economies of their regions on a wider basis than has been the case so far. Indeed, such-co-operation ought to be facilitated by the principles of the new Law on Higher

Education which firmly support the initiative of universities and colleges with regard to their own research specializations.

Of crucial importance for the correct shaping of both research plans as well as their implementation in higher education is the close co-operation of academic research centres with the networks of the Polish Academy of Sciences and of the ministerial institutes. Of fundamental importance for the co-operation is the unity and integration of all scientists and their milieux.

The rules in force during the 1974—1982 period, with regard to the financing of the research conducted by higher education institutions, envisaged its division, depending upon the way it was financed, into so-called contracted and non-contracted projects. The first of these included all the research carried out under contract with enterprises of the socialized sector or with other entities and institutions requesting the solution of certain R & D problems. Projects of this kind were financed by the requesting enterprise or administration.

The second type of research carried out in universities and colleges (known as "in-house" or non-contracted projects) is in principle financed from funds allocated for this purpose. Research projects falling under this rubric are carried out by the institutions themselves as a part of normal teaching activities, or they may be independent projects undertaken at the initiative of given institutions. In case the results of this work are sold by the institutions in question, the proceeds will be used to replenish the funds of the institute or institutes which actually did the work.

As a consequence, universities and colleges were interested in implementing projects ordered by enterprises of the socialized sector of the economy or in selling the results of their own research projects which they had undertaken as non-contracted work.

At present, the plan is to modify the principles by which universities and colleges are financed so as to increase their financial independence. Thus, their rights to dispose of profits from the research they have undertaken will be increased.

In 1980, almost 70 per cent of the research projects implemented in universities and colleges were carried out under contract with enterprises belonging to the socialized sector of the economy. The break-down by type of institution is as follows:

— technical schools — 84%
— agricultural schools — 67%
— universities and economics schools — 51%

A basic organizational form was given to most of this research by the participation of the universities and the colleges undertaking it in national, centrally controlled research programmes. Within the framework of these programmes, universities and colleges implemented almost 6,000 research projects in 1980, spending nearly 60 per cent of their research funds on them.

Another form of institutional co-operation is practiced by the academic-industrial institutes which were established after 1970. Their basic tasks are: 1) the organization of research and design-construction work for the development of given industrial branches; 2) the introduction by means of co-operation of the results of research into production; 3) the preparation of appropriate qualified cadres in given disciplines. These centres or institutes can also deal with

production based on applied techniques and technologies. The leading functions in such centres are usually performed by the research institutes affiliated with institutions of higher education.

Another form taken by the co-operative efforts linking universities and colleges with economic enterprises is the establishment of so-called specialized laboratories operating for the use of universities and colleges and R & D facilities of industry. Their task is to create conditions for the most effective use of particularly valuable and rare equipment and technical installations for purposes of research. These laboratories also serve to upgrade the scientific cadres of industrial facilities and higher education.

The country's economic situation as well as the economic reforms under way require essential changes in the R & D programme. The proportion of inexpensive and short-term development projects and basic research should grow at the expense of relatively high-cost and long-term applied research and development projects. The claim is made that the proportion of basic research outlays for R & D should amount to 20 per cent (in 1984 it was 16.4 per cent). In universities and colleges, for several years, the proportion allotted to basic research has made up from 25 to 40 per cent of the total costs of research, and at the same time, these institutions, since 1978, have been implementing more than half of the nation's basic research. The rate of growth of the value of basic research carried out in universities and colleges considerably exceeds the rate of growth of the value of applied research and development projects. These data amply justify the claim that if the level of research conducted as part of higher education remains unchanged, while the R & D conducted by other sectors continues to be reduced, the role of higher education in a nationwide R & D system can only be enhanced.

Research is carried out by basic units in given institutions which have only limited ties to the teaching sector. However, as the trend has been one of combining the basic organizational units of institutions, chairs for instance, to form larger institutes, the latter end up being engaged both in teaching and in research. The scale and the thematic diversification of the latter activity, however, require the diversification of the sources of funding. In financial terms, this process implies the transformation of universities and colleges into financially autonomous enterprises which nevertheless still obtain the bulk of their funds from the state budget.

Still, this duality within institutes and the separate financing of research and teaching units has led to competitiveness between the two types of activity. It has consequently become necessary to reintegrate the two types of units. Thus, academic-industrial institutes, academic-production centres, academic-industrial combines, etc. have been established. They are characterized by the combination of teaching, research, and development work and even work related to application and production.

In the past five-year plan, contracted projects absorbed some 75 per cent of the costs of research carried out in universities and colleges. The projects in question included those implemented within the framework of major research-development programmes (representing some 20 per cent of the value of research in higher education) as well as interministerial and ministerial programmes.

Research co-operation with universities and colleges in other CMEA countries is characterized by its durability and great effectiveness. Since 1984, Polish

universities and colleges have taken part in many long-term multilateral projects which have contributed greatly to permanently linking the research potentials of the cooperating institutions of the socialist countries.

Among the foreign partners of Poland in bilateral co-operation, the first place is occupied by universities, colleges, and scientific institutes of the Soviet Union. These are linked to Polish institutions by almost 100 agreements relative to direct co-operation. Co-operation also takes place in extra-contractual forms. These agreements link 44 Polish universities and colleges to over 70 Soviet research centres.

Polish universities and colleges also maintain cooperative links with institutions in the GDR, Czechoslovakia, Bulgaria, Hungary, Romania, Cuba, Vietnam, Mongolia, and Yugoslavia. Thanks to its durability, this co-operation is highly effective. By means of bilateral agreements, Polish institutions also cooperate with many academic centres in several European and non-European countries.

12. ACADEMIC LIBRARIES

Libraries constitute an integral part of higher education. They play an important role in teaching and in research.

The main libraries of universities and colleges, together with the libraries functioning in departments, institutes, and chairs, form the academic library network.

Academic libraries perform the function both of scientific information centres and of public libraries playing as they do an important role in the process of adult education. This role will grow when the "open universities" begin to function, for in their case the process of education will to a great extent be based on the independent studying of scientific literature.

Academic libraries, located in universities, in technical, economic, pedagogical, and agricultural schools, and in medical academies, house the largest book collections in the country. In 1984, they held a total of 35,159,000 volumes, including 6,864,000 periodicals and newspapers as well as 8,756,000 special publications, including 739,000 old prints.

The tasks of academic libraries are the following:

— to collect books as well as other documentary materials in keeping with the scientific specialization of given schools;

— to put the collections at the disposal of users;

— to carry out research and publishing activities within the scope and dimension of the institution in question;

— to organize courses on the use of the collections;

— to conduct bibliographical studies and to elaborate documentary materials for research projects carried out in given schools and colleges;

— to keep records of all publications produced by the given school or college;

— to publicize the collections.

According to the Law on Higher Education, the managing bodies of the main academic library in a given institution are the Library Council and the Library Director. The latter participates in the meetings of the senate. The Library Director supervises the activities of the academic library-information system, which is composed of the main library and departmental libraries, the latter, as a rule, being directly subordinated to the department head.

The Library Council has the following competences:

— it elects the director of the main library;

— it sets the directions of library-information activity in keeping with the needs of the research and teaching processes of the given university or college;

— it submits motions concerning the structure and the organization of the main library, of the academic library-information system connected with it;

— it oversees the development of the library staff and presents an opinion with regard to the filling of librarians' posts;

— it cooperates in the planning and in the supervision of tasks in all the libraries of the system.

This approach to the organization and the management of the academic library network is intended to make its use rational and effective both from the financial point of view as well as from that of the efficient use of equipment and personnel. The approach has stemmed from the adaptation of the library system to the transformations which are taking place in individual institutions.

In order to satisfy the new and ever growing requirements of their users, libraries are improving the forms and methods of their activities. In certain library centres, for instance, library-information processes have been computerized so as to interact with foreign data banks via magnetic tape, thus enhancing their value as sources of basic information about documents and publications.

13. PHYSICAL FACILITIES

The development of higher education is in a considerable degree dependent on the physical facilities available. The latter, however, are influenced by the general economic situation of the country. In the late 1970's in particular, the economic development of Poland was affected by certain world tendencies. As a result of the ensuing economic slowdown, problems of the development of given social sectors which included higher education, were given only secondary importance.

From the second half of the 1970's through 1981, the rate of investment in higher education declined every year. Although a certain increase in investment took place during the 1982—1983 period, the decline, in fact, continued as the result of the sharp rise in the rate of inflation (see Annex, Tables 17 and 18).

Under such conditions, a preferential policy of distribution of means has been applied giving preference to technical studies and subsequently to university and economic studies.

As a result of the expansion of the physical facilities and of the limited growth in the number of full-time students, the square meter index per student changed favourably — from 59.6 points in 1970 to 71.1 points in 1983. This change was due primarily to investments in the higher technical schools, in which the industrial ministries participated to a significant extent.

Thanks to this investment which took place over the past 15 years, the higher technical schools were able to expand their facilities. Indeed, they were the only component of Polish higher education which registered a considerable growth, expanding from 64 square metres per student in 1980 to 105.6 square metres in 1983. In many other types of colleges, this index deteriorated (see Annex, Table 19).

One must underline the fact that favourable changes in the square meter index per student stemmed primarily from a considerable expansion of facilities in technical higher education. However, it goes without saying that, owing to the length of the investment and construction cycle in higher education, an immediate, marked improvement as regards facilities is impossible. Thus, one can anticipate that the funds already allocated, especially for universities and higher schools of economics, will only give rise to visible improvement after 1985.

Taking into account the overall number of students educated in higher technical schools, in universities, and in economics academies, educational conditions will improve for about 63 per cent of the total number of full-time students in Poland.

Another important aspect of the material conditions of Polish higher education concerns research and teaching equipment. It tends to wear out very rapidly.

Given, however, that the costs for such equipment are constantly rising, the possibilities for maintaining the equipment of universities and colleges at an appropriate level are considerably limited (see Annex, Table 20).

Because of the drop in the purchasing power of the złoty, the Planning Commission of the Council of Ministers corrected the rate of investment by a coefficient of 1.98. The continued decline in the purchasing power of the złoty, in addition to the maintenance of allocations at the same levels each year, is forcing the universities and the colleges to increase the effectiveness of particularly rare and expensive research and teaching equipment. As a result, various units of higher education will have to share the use of such equipment.

14. RESEARCH ON HIGHER EDUCATION

In 1963, Jan Szczepański wrote in the foreword to his book, *Sociological Problems of Higher Education*: "... that so many essential matters concerning the functioning of higher education are solved on the basis of intuition, tradition, habit, rather than on the basis of scientifically verified knowledge and that so little systematic research indispensable for rational solving of practical problems is carried out". As revealed by the ensuing period which was characterized by the fast development of higher education in Poland, such research was an objective necessity, particularly in that in 1980 there were already 91 establishments of higher education in which 50,000 academic teachers taught 469,368 students, of whom over 35 per cent were actively employed.

The first organization to be set up especially to conduct research on higher education was the Research Workshop on Higher Education at Łódź University.

Its creation was dictated by the need to undertake empirical studies on the processes by which higher education development is planned. The tasks of the Workshop were defined as follows: to conduct research on socio-pedagogical problems connected in particular with the adaptation of young people to higher education, on the social life of students, on the employment of graduates, and on the conditions surrounding the practical utilization of the knowledge and skills that graduates have acquired.

Interest in the research conducted by the Workshop as well as its usefulness were the primary reason for reorganizing it in 1962 as the Intercollegiate Institute of Research on Higher Education, establishing it in Warsaw, and subordinating it directly to the Ministry of Science and Higher Education.

The scope of research of the Intercollegiate Institute was considerably expanded in comparison with the tasks of the Workshop. It was henceforth to cover the problems of the organization and the financing of higher education, the recruitment of students, the development of curricula, the employment of graduates, and problems concerning academic cadres.

In 1973, Decree No. 53 of 13 August of the Chairman of the Council of Ministers created the Institute for Science Policy and Higher Education * which took over the academic staff as well as the research programmes of the former Intercollegiate Institute of Research on Higher Education, including certain related institutes of the Polish Academy of Sciences.

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* In 1977, problems of technological progress were added to the statutory duties of the Institute, its name being changed to Institute for Science Policy, Technological Progress, and Higher Education. Then, in mid — 1987 the name was again changed to "Institute for Science Policy and Higher Education.

The scope of activity of the Institute was considerably expanded — first of all by giving it authority to undertake research in the field of scientific policy, and by expanding the scope of its research on higher education to include higher education development planning.

Another way in which it contributed to the institutionalization of research on higher education was its involvement in the setting up of Institutes of New Teaching Techniques as well as other units concerned with research on and application of educational methods in several universities and colleges, and the organization of intercollegiate methodological study centres for working people. The tasks of these centres included research on the effectiveness of education, the elaboration of organizational forms and methods of didactic work in studies for working people, and the collection, analysis, and dissemination of the results of and the experiences gained from the work undertaken.

A significant role in determining the long-term research being undertaken relative to the entire system of education, including higher education, has been played by the Committee of Experts for Elaborating a Report on the State of Education in the Polish People's Republic, which was formed on 31 January 1971, by order of the Minister of Science and Higher Education. Chaired by Professor Jan Szczepański, the Committee sat for two years and prepared the Report on the State of Education in the Polish People's Republic which was published in May, 1973.

Thus the early years of the 1970's witnessed the emergence of organizational and legal procedures intended to improve the planning, financing, and concentration of research on higher education. Centrally controlled research projects, the so-called key, ministerial, and branch projects, first appeared in the 1971—1975 five-year plan for scientific research and technological development. The targeted problems were given higher level treatment in the subsequent five-year plan (1976—1980) which envisaged government-sponsored and interministerial research-development projects.

In the field of educational research in Poland, a key project, entitled "Modernization of the System of Education in Developed Socialist Society", was completed during the 1976—1980 period. Several research teams cooperated in its realization. One of its parts, which was concerned with higher education, covered the planning of higher education, the socio-economic effectiveness of education, the system of selection and recruitment of students, the modernization of curricula, and the forms and methods of education.

Two other ministerial research projects on higher education were completed during the 1976—1980 period. One of these, "Improvement of the Higher Education System", was coordinated by the Institute for Science Policy and Higher Education and implemented by its staff in co-operation with several research teams from other institutions. The aim of this project was to forecast developments in higher education, particularly improvements in organizational structures and methods of management in universities and colleges as well as to formulate theoretical foundations and conditions for a functional modernization of higher education.

The second ministerial project, "Technical Equipment of Universities and Colleges", was aimed at the modernization of the teaching-learning process and the improvement of physical facilities.

Another ministerial project, "Methods for Increasing the Effectiveness of Foreign Language Teaching at the Higher Education Level" had as its aim the elaboration of the most efficient models (organization, methodology, and technique) possible for the teaching of foreign languages.

As directed by its statutes, the Institute has the task of coordinating and conducting fundamental research concerned with scientific policy and higher education in Poland. The selection of specific research projects and tasks as defined by the statutes and the individual interests of academic staff members takes place through discussion in individual research teams. In the cases of research projects for which the Institute does not have specialized scientific personnel, it will cooperate with the research teams of other institutions.

The Institute's first research five-year plan (1976—1980) envisaged 7 subject groups related to higher education:

a. The higher education of cadres; the use of cadres and their upgrading;
b. The improvement of teaching and learning processes;
c. The pedagogical and psychological problems of study courses;
d. Higher education: environment and institutions;
e. The organization and management of higher education;
f. The financial and material bases of higher education;
g. International comparative studies.

In individual subject groups, stress was placed on those problems which seemed most significant from the point of view of the pursuit of a long-term development policy of higher education. Thus, after consultation with the Scientific Council of the Institute as well as with the management of the Ministry of Science, Higher Education, and Technology, the research for the first subject group was concentrated on studies concerning the contingencies of higher education development through the year 2000 as well as on the elaboration of a multivariant forecast of educational offerings in the university system during the same period. Work was also undertaken with regard to international comparisons of the quantitative aspects of higher education development in various countries of the world. These studies are to be used to help verify the development trends forecast for Poland.

In the case of another subject group, research was carried out on a multifactor model based on the present contradictions between the rapidly growing pool of young people who are qualified to enroll in advanced training programmes and the limited possibilities of the higher education system.

Studies were also undertaken of possible innovations in higher education, such as the education of talented youth, the individualization of study courses, and the combining of studies with work. Sociological surveys concerning the attitudes, behaviour, prior education, and self-education of students have also been conducted. Considerable portions of the studies are concerned with teaching at the higher education level, including the modernization of methods and the technical means of their execution.

The results of all the studies which have been carried out on higher education constituted a background of source material for work undertaken in 1978 on the future model of higher education.

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A basic initial assumption for the implementation of the second five-year research plan (1981—1985) was that thematic research should be further concentrated.

The ministerial project, "Improvement of Higher Education", envisaged 5 subject groups:

a. Planning and forecasting the development of higher education;
b. Organization of higher education;
c. Modernization of teaching and educational processes;
d. Research on student and academic staff;
e. Research on graduates.

Research is carried out by the staff of the Institute in co-operation with research teams from outside. The part of the plan, entitled "Improvement of Higher Education", makes increased use of co-operation with teams from other institutions, not only for undertaking research but for its verification and the possible practical application of certain solutions.

One of the more difficult problems in the activity of a ministerial research institute is the need for it to conduct research of a high scientific level while at the same time obtaining empirical results than can immediately become a basis for decision-making.

Because of the need to reconcile these two aspects of the work of the Institute, it has been divided into two parts: the Division of Basic Research which undertakes fundamental research, the results of which are not directly applicable to practice, and the Division of Analyses, Information, and Publications which is responsible for work of a more practical nature: expert studies and analyses, all aimed at the preparation of materials intended to serve as a basis for making current and long-term decisions, both in the ministry to which the Institute is subordinated and in other decision-making units. This latter division bases much of its work on the results of research that has been carried out in the Institute.

A basic condition for both the use of the results of research and their possible application is their dissemination. This task is served by the Institute's five basic series of publications: I) Monographs and Studies; II) Reports on Research; III) Documents, Information, Bibliographies; IV) Communiqués on Research; and V) Immediate Information. The dissemination of the results of research is also served by cycles published within the series: "Manpower Planning", "Planning and Organization of Research", "Important Research Programmes", and "Academic Teacher's Library". The Institute also publishes two quarterlies: *Higher Education Didactics*, the subject-matter of which is much broader than what the title indicates, and *Sovremennaya Vysshaya Shkola*, a periodical published in Russian, and concerned with the socialist countries, the editorial board of which is accredited by the Institute.

The dissemination of information about Polish publications concerning higher education is also served by the *Bibliography of Higher Education* which has been produced by the Institute for many years.

The Institute's research plan is implemented both in co-operation with domestic teams from outside the Institute and within the framework of international co-operation. Co-operation is multilateral within the CMEA and UNESCO and bilateral with eight scientific research institutes in the socialist countries, with the Unesco International Institute for Educational Planning in Paris, and

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with the Centre for Research on Higher Education in the Comprehensive University of Kassel. The forms which this co-operation takes vary, ranging from very simple forms: exchanges of information on the results of research, to complex forms: the joint sponsorship of consultations, seminars, and specific research projects. One tangible result of this co-operation has been the joint publication (in two languages) of seminar materials. The team of the Institute working with the Unesco International Institute for Educational Planning in Paris wrote a monograph, entitled *Graduate Employment and Planning of Higher Education in Poland.* It was initially published in English by Unesco and reissued in 1985 as *Education and Work in Poland.*

At present, a joint research project on higher education graduates is being carried out in collaboration with the research institutes of the GDR, Hungary, and Czechoslovakia.

The results of the various types of research and studies conducted at the Institute are also made known through the participation of its staff members in international conferences and seminars.

15. HIGHER EDUCATION IN POLAND COMPARED TO THAT OF OTHER COUNTRIES

With regard to comparative higher education, the researchers at the Institute think that international comparisons, because of their imperfections, can have only an informative character suitable for indicating current tendencies and changes. This type of information is suitable for situating a given country with respect to its educational development in comparison to that of other countries, and it facilitates the determination of the extent to which development is specific. Moreover, comparisons of the numbers of students and of graduates of higher education systems in different countries lead to different conclusions: one related to the organization of courses (their planned duration), the other to their implementation (their actual duration).

Another shortcoming of international comparisons is the fact that the data needed to make them are often released late. Nevertheless, the random observation of certain phenomena in certain countries can still be analyzed depending on the available statistical materials.

15.1. Higher Education in Poland Compared to that in the CMEA Countries

The years 1960—1970 witnessed an expansion of higher education in Poland as in many countries of the world, including the entire group of socialist countries. During the 1970—1975 period, growth, particularly in the number of students enrolled, continued in most of these countries (the notable exception being the GDR). In the following period (1975—1980), however, two different trends manifested themselves in the socialist countries: further expansion of enrollments in Czechoslovakia, Cuba, Mongolia, Romania, and the Soviet Union and a decline in student numbers in Bulgaria, the GDR, Poland, and Hungary. After 1980, Czechoslovakia and Romania joined the group of countries reporting downward enrollment trends. These trends, of course, are corrected for numbers of graduates as determined by the average duration of studies in each country.

As regards the rate of growth of the number of students during the 1970—1982 period, Poland ranked fifth among nine socialist countries, and with respect to the rate of growth of the number of graduates, fourth. In 1982, the index of the number of students per 10,000 inhabitants placed Poland fifth in the same group of states and the same as regards the number of graduates per 10,000 inhabitants (cf. Tables 22 and 23 in the Annex).

A comparative analysis of the educational level of graduates per 10,000 inhabitants in 1982 according to types of higher education reveals certain specific features of the Polish situation. Poland holds seventh place in terms of technical school education and fourth in terms of medical and physical education. Thus in Poland, in contrast to the situation prevailing in the other socialist countries, the proportion of technical school graduates was declining while that of agricultural schools graduates was growing.

Full-time studies and studies for working people also displayed different trends in Poland than in the other socialist countries. During the 1970—1982 period, the proportion of employed students declined in the majority of the socialist countries; however, in Poland, the proportion increased during the first half of this period and only began to decline after 1975. Thus, the total number of working students decreased from 40 to 29 per cent during the 1975—1982 period.

The downward trend in the student-teacher ratio resulting from the more rapid growth in the teaching staff members than in the number of students has continued in all the socialist countries. In Poland during the 1970—1982 period, the student-teacher ratio declined from 10 to 7, thus placing Poland third in this respect in 1982.

One characteristic of the quantitative development of higher education in the socialist countries, which the figures make evident, is that the growth in student enrollments was slower in the majority of the countries during the 1970—1980 decade than in the preceding decade. This result is due, on the one hand, to the satisfaction of a strong demand for graduates in certain fields and, on the other hand, to limitations for demographic reasons in the development of enrollments. Moreover, smaller age-group cohorts reached the level of higher education while at the same time the national economy has increased its demand for workers with lower qualifications. Some socialist countries (e.g. the USSR) considered the possibility of stabilizing the number of students for a certain period while increasing the quality of education, calling the procedure a new stage of intensive development in higher education (Chuprunov, 1982).

Such phenomena prove that even the socialist countries face the necessity of reorienting their views of higher education. They must reconcile the perceived general interests of society with individual aspirations as well as take into account the necessary divergences in the goals of mass education at an advanced level in relation to those of selective education, if higher education is indeed to become selective in the future.

15.2. Higher Education in Poland Compared to that in the Countries of the Europe Region

Among the many myths with wide circulation in Poland is the one which claims that Poland has an excessively expanded system of higher education in terms of its economic possibilities.

A valid composite analysis covering 28 countries in the Europe Region is possible (cf. Tables 24 and 25 in the Annex), based on the statistics relative to

the sixth and seventh levels of education according to the Unesco-ISCED system *.

As regards the rate of growth of student numbers during the 1971—1980 period, Poland held 20th place with an index of 130.4. Its index of student numbers, 127.5 per 100,000 inhabitants, placed it 16th. The index of the rate of growth of the number of graduates, 149.3 for the 1971—1979 period, placed Poland 12th, while the index of the number of graduates per 100,000 inhabitants placed it fifth in 1979.

Unesco statistics also show that in 1980 Poland ranked 4th as regards the index of feminization of studies (30%). A high degree of feminization of university studies is, incidentally, characteristic of the majority of the socialist countries.

When evaluating the level of access to higher education for women and men based on the student numbers index per 100,000 inhabitants of a given sex, we obtain the following positions for 1980: women — 12th place with an index of 123.7, men — 20th place with an index of 129.9.

Although one would expect the structure of education according to study specialization to be one of the most variable elements in higher education, particularly in those countries in which educational planning takes into account the demand of the economy for qualified cadres, based on statistical projections, the contrary seems to have taken place (H. Jabłońska-Skinder and T. Obrebski, 1979). Therefore, the conclusion can be made that neither the market mechanism in the capitalist countries nor the planned system of management under socialism are able, to a satisfactory degree, to give advanced warning of changes in the economy which will take place under the influence of the development of science and technology as well as of the emergence of new professions and specializations in connection with these changes.

It also seems evident that the fact of evident surpluses of graduates in certain disciplines on the labour market does not exert a very strong influence on higher education systems and on students in favour of their choice of studies leading to less saturated markets. At present, and on the basis of statistical data, it is only possible to point out certain differences in educational structures according to disciplines. For instance, in the socialist countries there is a predominance of students in fields linked to the first and second sectors of their respective economies (extraction and processing of industrial products), while in the capitalist countries, the majority of students choose specializations associated with the service sector.

The results of a more detailed comparative analysis of indices of the number of graduates per 100,000 inhabitants are presented in Table 25 in the Annex. Among the 28 countries analyzed in 1980, Poland was 9th with regard to the index of the total number of graduates. In individual fields of study, its position is as follows: third in agricultural studies and sixth in technical studies.

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* International Standard Classification of Education (ISCED). According to this classification, post-secondary education encompasses the fifth, sixth, and seventh levels.

Different interpretations of the methodological principles used by Unesco and the CMEA for higher education in individual countries have caused some indices for certain socialist countries to vary in the two presented sets. Significant differences occur in particular in the cases of the GDR and of Hungary. The CMEA statistics seem in fact to be more nearly correct in these cases.

16. PROSPECTS FOR THE FUTURE AND CONCLUSIONS

The academic staff potential of Polish higher education and its material resources have considerably increased. This generalization holds true to an equal extent for secondary vocational as well as for other forms of non-compulsory education. At present, over one-half of the corresponding age cohort completes secondary education (thus earning the right of access to higher education) and nearly 10 per cent of this group obtain academic degrees. At the same time, 23 per cent of the adult population of Poland have completed full secondary education, and 5.3 per cent have earned academic degrees. In the socialized sector of the economy, 29% of the employees are secondary school graduates and 9% are higher education graduates. Detailed empirical studies have indicated that a considerable portion of the latter group are dissatisfied with the manner in which their professional qualifications are used.

The degree of saturation of the economy and of the various national services with university graduates with superior qualifications, and an evaluation of the manner in which these qualifications are used give rise to many reflections and conclusions. In fact, the present number of qualified graduates is very high given the technical potential of the Polish economy. Nevertheless, there are still considerable possibilities for increasing the employment of qualified graduates, the distribution of these cadres in individual divisions and branches of the economy and throughout the various regions of the country being far from the optimum. Against this background, hints that cadres with higher and secondary education qualifications are being improperly used are disturbing.

The situation, in fact, has been sufficiently alarming to underscore the need for making changes both in the state educational policy and in the policies relative to the employment of qualified graduates. The only immediate possibilities, however, are changes in certain fields of study and perhaps also in the traditionally shaped higher education network. Later, under more favourable economic conditions, it will be necessary to undertake a general reform of the entire system of education. One result should be a coherent graduate employment policy including the use of incentives to favour the rational use of qualifications and the proper distribution of specialists. Employers themselves should pay more attention to making the best use of the qualifications of their employees. In this respect, the assumption should be that the twenty-year period running from 1981 to the year 2000 will be characterized by a different situation in the qualified labour market than was the case during the 25-year period between 1957 and 1980. A further assumption which one can make is that in the future the qualified labour market will lose its stimulative force with regard to the development of the entire post-

secondary education system to the benefit of the social needs of the country, particularly those stemming from future developments in science and culture.

The notion of "social educational needs" will be understood as motivations which do not result from demands for professional abilities alone but will include:

a) those which result from demographic changes;

b) those which arise from the motivations and attitudes of the population;

c) those which stem from the development of science and the maintenance of the continuity of cultural development.

Demographic transformations constitute the most significant elements in shaping future educational tasks. After the end of the present demographic downturn, around the year 2000, a new wave of 19-year-olds seeking admission to higher education should be expected. As a matriculation cohort, the group could be even larger than that of the peak year, 1975. Therefore, considerable fluctuations in the intake of full-time students will take place, itself dependent upon the level of universalization of secondary school education. In view of this coming wave, higher education needs to be prepared well in advance.

The educational aspirations of the population are much less easy to detect than the results of demographic estimates. One can nevertheless assume that the number of candidates for traditional academic studies will not increase at a rate greater than that of the increase in the number of people entitled to undertake higher studies. Pressure on higher education may be weaker in the future than it is now if a system of post-secondary education can be created which is competitive with higher education. Short educational cycles might be particularly attractive for graduates of general secondary schools.

The nature of the development of science and culture will determine the size and directions of the educational activities of the government. Although financial limitations will undoubtedly motivate the principal restrictions on the development of education in the future, one can nevertheless assume that the education system will continue to develop but under somewhat different conditions and perhaps also in different forms than is the case today. Educational institutions will continue to raise the educational level of the active population at a faster rate and on a larger scale than what is in fact required by the needs of the development of material production and of services.

The need to improve the methods of educational planning is, of course, of paramount importance as is the need to improve the forecasting of educational tasks — those stemming from the training functions of education as well as those stemming from individual aspirations and from the needs linked to the development of science and of national culture. All of the above require that the availability of reliable statistical data, including comparable international data, be enhanced. Thus, it will be possible to improve educational methodology, and to gain a better understanding of future needs.

In addition to the traditional methods applied in educational planning, certain econometric methods have also proved to be useful as well as simulation models of structural-professional changes resulting from increased education. Such models can be used to calculate fluctuations in the numbers of graduates or to modify the processes by which the labour market is provided with streams of well-trained graduates. These models in fact represent an original Polish contribution to the fields of educational planning.

A saturated or limited graduate labour market is a fundamental problem which conditions the development of education in the future. Many economic studies have been devoted in most of the countries of the world to the role of labour in economic development. Thus one can assume that in the future as well the human factor will determine the degree of success of the development of the Polish economy. For this reason, higher education policy in the future should continue to favour the retention of a saturated graduate labour market. Only such a market can guarantee the proper distribution of graduates as well as the full competitiveness of qualifications and talents rather than of mere diplomas. It can also generate the proper conditions for initiatives and new directions in the development of new economic specializations.

But a saturated graduate labour market will also have negative consequences. It will create tensions among young people, frustrations, and dissatisfaction. Still, these consequences can be at least partially counteracted by an information campaign intended to convince society that diplomas only provide the conditions for a good professional start; final success can only depend on one's individual attitudes and abilities. In the current period, characterized as it is by transitory economic strains and failures, the intellectual potential of working people can and should be an asset. It could rise to a widely based form of international co-operation leading to the export of scientific and technological know-how.

The conclusion must be reached, in the light of the above, that the development of education, including higher education, depends to a large extent on the possible socio-economic conditions as well as on the degree to which economic restrictions in the education system itself and in the entire national culture can be overcome. The current need to adjust to changing conditions should be ascribed even more to the national economy than to education itself. Thus, the further development of education depends mostly on the adjustment performance of the economy.

Changes in the national economy leading to changes in the role of employers in the system of employment and in the use of qualifications of employees should be vigorously seconded by corresponding reforms of the educational system itself, particularly if the changes in question stand to effectively influence current reality. Certainly, the practice of formally fixing levels of education to a hierarchically constructed pyramid of jobs, both in the system of education and in the system of employment, should be gradually eliminated.

Post-secondary education will continue to be the most advanced level of education. It will continue to equip its graduates with the knowledge and the skills necessary to perform their tasks in their chosen professions. The selection process for worker-operator, managerial, research, and teaching positions should take place at the interfaces of education and employment through the confrontation of talents and aspirations with practical tests of professional potential. This step would be the next one on the road to making higher education less exclusive. It would continue the evolution of the university from its pre-war role in the formation of social elites, to the contemporary phase of meritocratic elite formation, to a future higher education of equal opportunities.

It will be necessary to prepare youth and adults to be able to willingly change professional and career roles, the need to change being determined by social and personal situations, which are difficult to predict and to control, as they are

Centres of Higher Education in Poland in 1985
/according to the number of full-time students/

Universities and their branches
Technical higher schools
Agricultural academies
Academies of economics
Higher pedagogical schools
Medical academies
Higher artistic schools
Academies of physical education
Theological academies
Branches and filial departments

Table 1

Basic Statistical Data concerning Development of Higher Education in Poland in 1970–1985

Specification		Total	Universities	Higher technical schools	Agricultural academies	Academies of economics and Higher School of Social Sciences	Higher pedagogical schools	Medical academies	Higher marine schools	Academies of physical education	Higher artistic schools	Theological academies
1		2	3	4	5	6	7	8	9	10	11	12
Schools	1970/71	85	10	18	7	5	9	10	2	6	16	2
	1975/76	89	10	18	7	6	12	10	2	6	16	2
	1980/81	91	10	18	9	6	11	10	2	6	17	2
	1981/82	91	10	18	9	6	11	10	2	6	17	2
	1982/83	91	10	18	9	6	11	10	2	6	17	2
	1983/84	91	10	18	9	6	11	10	2	6	17	2
	1984/85	91	10	18	9	6	11	10	2	6	17	2
	1985/86	92	11	18	9	6	10	11	2	6	11	2
Branches-filial departments	1970/71	15	4	7	1	1	—	—	—	1	1	—
	1975/76	36	6	18	1	1	—	2	—	2	6	—
	1980/81	26	4	9	1	1	—	3	—	2	6	—
	1981/82	34	4	9	4	1	6	3	—	2	5	—
	1982/83	37	4	9	4	1	7	3	—	2	7	—
	1983/84	30	4	6	3	1	7	1	—	2	6	—
	1984/85	29	5	6	2	2	6	1	—	2	5	—
Consultation centres	1970/71	103	24	42	13	14	1	—	—	8	1	—
	1975/76	127	25	41	14	18	7	2	—	13	3	4
	1980/81	131	32	41	24	19	5	2	—	3	1	4
	1981/82	120	27	37	22	19	6	2	—	2	1	4
	1982/83	97	23	27	18	14	5	2	—	1	1	6
	1983/84	63	11	20	12	8	2	2	—	1	1	6
	1984/85	56	11	19	10	6	1	2	—	—	2	5
Total number of students /Thous./	1970/71	330,8	97,5	124,9	33,5	25,0	14,8	22,9	0,9	5,0	5,2	1,1
of whom: women		139,8	57,0	25,0	13,0	14,7	10,1	15,1	—	1,9	2,5	0,5
Total:	1975/76	468,1	147,1	143,6	42,0	31,5	47,5	29,7	3,5	14,2	7,2	1,8
of whom: women		230,5	93,3	35,1	18,8	20,7	33,8	18,9	—	5,6	3,6	0,7
Total:	1980/81	453,7	131,2	127,6	61,1	34,1	36,9	35,1	3,6	13,2	7,7	1,8
of whom: women		226,7	84,5	31,1	27,4	21,5	27,9	22,4	0,1	5,4	3,8	0,8
Total:	1981/82	426,5	125,0	114,7	57,3	31,6	37,1	34,5	3,6	11,9	7,7	1,8
of whom: women		215,6	87,7	28,3	25,8	19,7	28,2	22,1	0,1	4,7	3,8	0,9
Total:	1982/83	396,6	119,0	103,9	50,8	27,4	37,4	33,9	3,4	10,6	7,4	1,9
of whom: women		199,8	76,3	24,5	22,7	16,9	28,2	21,5	0,1	14,0	3,7	0,9
Total:	1983/84	396,6	112,7	91,5	44,3	26,1	36,9	33,9	3,4	10,7	7,4	2,1
of whom: women		187,6	72,6	21,2	20,0	15,2	27,7	21,5	0,1	3,9	3,7	1,0
Total:	1984/85	349,8	110,7	81,3	38,8	23,4	37,3	33,9	3,1	11,4	7,5	2,1
of whom: women		177,7	71,4	17,6	17,1	13,4	27,6	21,3	0,1	4,1	3,8	11,1

Table 5

Relations between the Socio-Occupational Structure of Students' Parents and the Structure of the Working Population in General

Socio-occupational groups	Occupationally active in general	Students' parents	Ratio b : a
	(a)	(b)	
In general	100,0	100,0	1,0
Managerial political, administrative and economic personnel	1,8	3,5	1,9
Engineers, technicians, foremen and related jobs	3,9	11,4	2,9
Specialists in agriculture and forestry	0,6	1,1	1,8
Scientific workers	0,2	1,8	9,0
Physicians, dentists, pharmacists and related	0,4	3,3	8,2
Judges, lawyers and related professions	0,2	0,8	4,0
Teachers	1,9	6,5	3,4
Remaining specialists in non-technical professions	2,4	2,8	1,2
Administrative and office workers	8,1	22,2	2,7
Workers in industrial, building and related occupations	26,2	12,8	0,5
Workers in occupations connected with transport and communications	5,1	3,6	0,7
Workers in occupations connected with trade and non-industrial services	6,6	5,9	0,9
Workers in various simple jobs and unqualified workers	4,5	3,3	0,7
Farm and forest workers	2,3	0,7	0,3
Private farmers	32,5	12,2	0,4
Working on their own account outside agriculture	1,2	2,6	2,2
Remaining (including absence of data)	2,1	5,5	2,6

Note: Due to the absence of other data, the structure of the occupationally active population refers to the year 1972.

Source: W. Adamski, K. Zagorski. *Opportunities for Acquiring Education in Poland.* Warsaw, 1979.

Table 6

Socio-Occupational Groups of Fathers according to the Faculties in which Their Children Have Studied (expressed in percentages)

Socio-occupational groups	Lines of studies						
	Engineering and technical	Agriculture and forestry	Mathematics, physics and natural sciences	Medical	Economic	Legal	Humanities, social sciences and others
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Managerial personnel of the central and the local administration	0.3	0.0	0.6	1.3	0.6	0.0	0.7
Employees of political and social organizations	0.7	0.0	0.4	0.8	0.8	1.2	1.2
Managerial personnel of industrial unions, enterprises, and factories	4.7	3.0	3.2	6.6	3.7	5.8	4.8
Scientific and research workers in the technical sphere	1.3	0.0	0.4	1.3	0.6	0.0	1.0
Engineers, designers, constructors, and related professions	10.9	4.7	5.1	11.2	7.2	2.9	6.4
Technicians, foremen and related occupations	13.1	7.4	10.0	8.4	8.6	8.8	11.1
Specialists in agriculture and forestry	1.5	3.5	1.9	2.3	0.8	2.3	2.2
Scientific and research workers in non-technical sciences	0.9	0.8	3.0	2.3	0.2	1.2	1.9
Physicians and related professions	1.7	2.3	1.1	6.1	1.6	3.5	1.5
Judges, lawyers, and related professions	0.8	0.4	1.3	2.5	0.6	3.5	1.1
Teachers	3.5	5.8	4.5	3.8	2.9	2.3	4.5
Remaining specialists in non-technical professions	1.6	2.3	1.9	1.8	2.9	1.2	1.9
Administrative and office workers	11.2	10.5	13.2	16.5	16.2	17.5	11.7
Workers in industrial, building and related occupations	16.6	13.6	17.3	10.9	20.0	12.9	14.1
Workers in occupations connected with transport and communications	5.5	5.4	6.4	3.8	6.5	5.8	6.9

Table 11

Full-time Teachers during the 1970–1985 Period

Specification	1970/71	1975/76	1980/81	1981/82	1982/83	1983/84	1984/85
Total	31320	48837	54681	54691	56498	55887	56598
Evolution (1970–1971 = =100.0)	100.0	155.9	174.6	174.6	180.4	178.4	180.7
Proportion of professors	1850	2409	2938	2879	2974	3102	3183
Evolution (in %)	100.0	130.2	158.8	155.6	160.8	167.7	172.1
Proportion of assistant professors	4099	5345	5391	5564	5520	5527	5628
Evolution (in %)	100.0	130.4	131.5	135.7	134.7	134.8	137.3
Others	25371	41083	46352	46248	48004	47258	47787
Evolution (in %)	100.0	161.9	182.7	182.3	189.2	186.3	188.4

Source: As in Table 8.

Table 12

Number of Full-time Students per Academic Teacher during the 1970–1985 Period

Number of students per	1970/71	1975/76	1980/81	1981/82	1982/83	1983/84	1984/85
Professor and assistant professor	35.3	36.4	36.1	35.0	33.3	31.8	30.6
Academic teacher	7.2	6.1	5.7	5.6	5.3	5.2	5.1

Source: As in Table 8.

Table 13

Structure of the Scientific Cadres in Higher Education according to Posts Occupied during the 1960–1984 Period

Year	Full professors	Associate professors	Assistant professors	Adjuncts	Senior lecturers	Assistant lecturers	Total
1960	587	1001	1461	4067	6677	2402	16195
1965	653	1072	1944	5468	6258	2824	18219
1970	656	1194	4099	6690	9252	3752	25643
1975	723	1693	5373	12036	14755	5797	40377
1980	875	2074	5414	18928	14585	4887	46763
1981	838	2052	5592	19760	13754	4810	46806
1982	887	2110	5520	20375	12757	4600	46240
1983	902	2218	5527	21289	11205	4583	45724
1984	897	2286	5628	21996	10486	4619	45912
Structure in percentage							
1960	3.6	6.2	9.0	25.1	41.3	14.8	100.0
1965	3.6	5.9	10.7	30.0	34.3	15.5	100.0
1970	2.6	4.7	16.0	26.1	36.0	14.6	100.0

1975	1.8	4.2	13.3	29.8	36.5	14.4	100.0
1980	1.9	4.4	11.6	40.5	31.2	10.4	100.0
1981	1.8	4.4	11.9	42.2	29.4	10.3	100.0
1982	1.9	4.6	11.9	44.1	27.6	9.9	100.0
1983	2.0	4.9	12.1	46.5	24.5	10.0	100.0
1984	2.0	5.0	12.3	47.9	22.8	10.0	100.0

Table 14

Student / Teacher Ratio

Year	Number of students per teacher	
	1 professor and assistant professor	1 academic teacher [a)]
1960	44.9	7.8
1965	58.9	10.4
1970	51.3	10.5
1975	54.2	9.1
1976	56.6	9.4
1977	55.6	9.2
1978	54.4	8.9
1979	52.7	8.5
1980	50.6	8.1
1981	47.1	7.6
1982	43.3	6.9
1983	40.5	6.6
1984	30.6	6.9

a) Without groups specified in second column, calculating the outlays of work of academic teachers per full-time and working students.

Table 15

Structure of Academic Teachers Employed in Higher Schools (as of the beginning of the academic year)

Specification	1977		1982		1983		1984	
	in thousands	%	in thousands	%	in thousands	%	in thousands	%
Total employment in higher education	125,1	100.0	134,1	100.0	131,9	100.0	134,0	100.0
All academic teachers of whom:	51,6	44.1	56,6	42.4	55,9	42.4	56,6	42.2
Proportion of professors and assistant professors	8,0	15.4	8,5	15.0	8,6	15.4	8,8	15.6
Adjuncts, senior assistant lecturers, and assistant lecturers	34,3	66.5	38,3	67.7	37,1	66.4	38,3	67.8
Proportion of other teachers	9,3	18.1	9,8	17.3	10,2	18.2	9,4	16.6

Percentage in relation to the number of academic teachers.

Table 22

Basic Data concerning Higher Education in 1982 in Selected Socialist Countries

No.	Country	Number of students per 10,000 of the population		Share of full-time students		Number of students per academic teacher		Total		Number of graduates per 10,000 of the population — Proportion of whom from higher schools of					
										industry, building, transport, etc.		agriculture forestry, etc.		health protection and physical education	
		Ind.	R	Ind.	R	Ind.	Rli	Ind.	R	Ind.	R	Ind.	R	Ind.	R
1.	Bulgaria	8.5	7	78.2	5	6.4	2	19.2	7	6.0	6	0.7	9	3.3	1
2.	Hungary	9.4	6	62.7	7	7.2	4	23.7	2	6.4	5	1.7	6	2.5	2
3.	GDR	7.8	9	83.1	2	4.4	1	15.0	9	4.0	8	0.8	8	1.4	9
4.	Cuba	17.7	2	44.8	9	14.2	7	20.6	6	3.8	9	2.1	5	1.7	7
5.	Mongolia	14.3	3	84.9	1	19.3	9	22.3	4	6.8	4	2.3	4	1.7	8
5.	Poland	11.0	5	71.3	6	7.0	3	21.0	5	5.3	7	2.7	2	2.3	3
7.	Romania	8.1	8	78.5	4	13.0	6	17.3	8	9.6	3	1.2	7	1.9	5
8.	USSR	19.7	1	56.9	8	14.1	8	31.1	1	13.1	1	3.0	1	2.3	4
9.	Czechoslovakia	12.5	4	80.2	3	9.1	5	23.6	3	10.8	2	2.5	3	1.8	6

Ind. = Index
R = rank — order from highest index
Rli = rank — order from lowest index
Note: Alphabetical order of countries according to Russian spelling.
Source: Own calculations on the basis of data in *Statisticheskij Yezhegodnik Stran Chlenov SEV*, 1983.

Table 23

Evolution of the Number of Students and Graduates in 1982 in Selected Socialist Countries (1970 = 100)

Number	Country	Evolution of the number of students		Evolution of the number of full-time students		Evolution of the number of graduates Proportion from schools of							
						Total		industry, building, transport, etc.		agriculture, forestry, etc.		health protection and physical education	
		Ind.	R	Ind.	R	Ind.	R	Ind.	R	Ind.	R	Ind.	R
1	Bulgaria	93.0	8	97.2	9	129.8	8	103.9	9	42.9	9	207.1	3
2	Hungary	125.5	4	117.6	7	139.6	6	113.3	8	66.7	8	180.0	5
3	GDR	90.9	9	108.1	8	112.1	9	126.9	6	127.3	6	120.0	9
4	Cuba	492.9	1	—	1	531.6	1	462.5	1	1050.0	1	212.5	2
5	Mongolia	298.8	2	287.8	2	216.7	2	300.0	3	200.0	4	150.0	7
6	Poland	119,9	5	134.8	4	16.1	4	122.1	7	208.7	2	184.4	4
7	Romania	119.1	6	132.7	6	159.2	5	314.5	2	158.8	5	221.1	1
8	USSR	116.0	7	134.9	5	133.3	7	146.3	5	117.9	7	143.6	8
9	Czechoslovakia	146.6	3	145.3	3	197.8	3	255.4	4	205.3	3	175.0	6

Ind. — Index
R — Rank — order from highest index
Note: Alphabetical order of countries according to Russian spelling.
Source: Own calculations on the basis of data in: *Statisticheskij Yezhegodnik Stran Chlenov SEV*, 1983.

Table 24

Basic Data concerning Higher Education in Countries of the Europe Region (6th and 7th levels of education)

Number	Country	1980								1971–1980		1979		1971–1979	
		Number of students per 100,000 of the population		Number of male students per 100,000 males in the population		Number of female students per 100,000 in the female population		Percentage of women among students		Growth rate index of the number of students		Number of graduates per 100,000 of the population		Growth rate index of the number of graduates	
		Ind.	R	Ind.	R	Ind.	R	Ind.	R	Ind.	R	Ind.	R	Ind.	R
1.	Austria	1687	8	2164	5	1269	9	39.4	20	167.5	7	113	26	137.3	14
2.	Belgium	1175(79)	17	1665(79)	10	800(79)	22	32.6	25	151.5	12	195(78)	16	160.5(78)	8
3.	Bulgaria	985	21	910	27	1029	17	53.2	2	91.2	27	219	9	142.3	13
4.	Canada	2492(77)	2	3581(77)	21	2372(77)	2	49.8	5	144.1	13	485	2	134.3	15
5.	Czechoslovakia	1287	15	1536	15	1045	16	42.0	17	153.8	11	204	12	151.8	10
6.	Denmark	1618	9	1922	7	1320	7	41.3	18	168.3	6	204	11	262.1	24
7.	Finland	1735	6	1778	9	1637	5	48.6	6	139.1	15	239	6	130.4	17
8.	France	1462	11	—	12	—	10	—	13	112.6	25	—	14	—	24
9.	GDR	1853	5	1533	14	2177	3	60.9	1	203.6	3	424	3	224.3	6
10.	FRG	1729	7	2236	4	1193	13	36.7	24	222.5	1	143	21	134.3	16
11.	Greece	884(79)	24	1092(79)	22	801(79)	21	40.5	19	119.0	23	185	17	150.6	11
12.	Hungary	558	27	592	28	515	27	47.6	7	103.9	26	130(80)	23	125.4	20
13.	Ireland	1009	20	1118	21	956	18	46.0	9	154.4	10	220	8	102.5	27
14.	Israel	1440(79)	12	1542(79)	13	1301(79)	8	46.2	8	120.1	22	237	7	119.9	22
15.	Italy	1904	4	2250	3	1580	6	42.2	15	140.3	14	145	20	128.5	18
16.	Netherlands	1478	10	1912	8	1059	15	32.0	26	134.2	19	108	27	109.7	26
17.	Norway	1089(79)	18	1334(79)	17	850(79)	19	39.3	22	155.0	9	—	13	—	5
18.	Poland	1275	16	1299	20	1237	12	50.0	4	130.4	20	250	5	149.5	12
19.	Portugal	856(79)	26	1012(79)	25	734(79)	23	44.6	12	185.8	5	132	22	343.6	1
20.	Romania	868	25	987	26	720	24	42.0	16	129.9	21	172	18	15.6	23
21.	Spain	1333	14	1569	11	1110	14	42.5	14	209.8	2	113	25	294.2	2
22.	Sweden	886(79)	23	1054(79)	23	657(79)	25	38.6	23	58.9	28	196	15	82.9	28
23.	Switzerland	949	22	1316	18	570	26	32.0	27	135.5	18	129	24	154.4	9
24.	Turkey	516(78)	28	1018(78)	24	346(78)	28	26.2	28	136.2	16	66	28	271.4(78)	3
25.	Soviet Union	1972	3	2087	6	1716	4	52.0	3	113.9	24	310	4	121,5	21
26.	United Kingdom	1059	19	1312	19	819	20	39.4	21	197.5	4	211(80)	10	127,7(72)	19
27.	United States	4617(76)	1	5450(76)	1	3870(76)	1	44.5	1	135.5	17	610	11	110,4	25
28.	Yugoslavia	1389	13	1524	16	1259	11	45.9	10	159.9	8	155	19	201,7	7

Index for 1971–1979.
R = Rank – order from highest index
Ind. = estimate of index or rank
Figures in brackets denote the year to which the index refers.
Source: Own calculations on the basis of: *Statistical Yearbook Unesco*, 1973 – 1974; *GUS Statistical Yearbook*, 1972, 1980 – 1981; *Development of Education in Europe*, Unesco, 1980, *Higher Education and Economic Development in Europe*, 1975 – 1980.

Table 25

Graduates of Higher Education in Countries of the Europe Region (6th and 7th levels of education)

Number	Country	Year	Total		Mathematical-natural studies		Technical studies		Medical studies		Agricultural sciences		Other	
			Ind.	R	Ind.	R	Ind.	R	Ind.	R	Ind.	R	Ind.	R
1	Austria	1980	118.41	26	12.26	16	14.23	23	16.88	17	3.64	20	71.40	24
2	Belgium	1978	194.96	16	24.73	9	31.60	12	38.52	4	4.77	15	93.34	15
3	Bulgaria	1980	207.39	14	17.56	11	72.73	5	16.72	19	9.99	8	90.39	16
4	Canada	1980	473.17	2	35.68	4	38.03	9	32.68	5	10.83	7	355.95	2
5	Czechoslovakia	1980	208.36	12	7.04	22	80.02	3	16.29	20	21.07	4	83.94	19
6	Denmark	1980	200.35	14	6.22	23	28.97	13	31.99	7	3.20	23	129.97	9
7	Finland	1980	223.55	8	35.72	3	25.58	14	20.48	15	5.41	13	136.36	8
8	France	—	—	6	—	6	—	19	—	6	—	—	—	13
9	GDR	1980	427.69	3	14.20	14	99.33	2	102.61	1	25.98	2	185.57	3
10	FRG	1979	142.94	21	13.28	15	10.69	25	25.34	11	4.15	17	89.48	17
11	Greece	1979	185.47	17	25.74	8	17.20	21	25.54	10	4.89	14	112.10	12
12	Hungary	1980	129.63	23	4.05	25	24.41	15	13.29	26	9.59	9	78.29	21
13	Ireland	1980	246.47	5	28.46	7	23.95	16	23.79	12	6.50	11	163.77	4
14	Israel	1979	237.26	7	34.27	5	45.05	8	12.13	27	6.10	12	139.71	7
15	Italy	1979	144.57	20	15.08	12	20.42	20	47.37	2	3.70	19	58.00	27
16	Netherlands	1980	107.27	27	7.77	21	10.45	26	13.57	25	3.16	24	72.32	22
17	Norway	—	—	11	—	27	—	17	—	22	—	16	—	6
18	Poland	1980	217.99	9	11.62	17	59.75	6	16.83	18	25.78	3	104.0	14
19	Portugal	1979	132.27	22	5.78	24	14.78	22	15.95	21	4.02	18	91.74	15
20	Romania	1979	171.62	18	11.47	18	77.23	4	15.63	24	14.01	5	53.28	26
21	Spain	1980	124.60	25	14.41	13	7.16	28	29.62	8	1.20	26	72.21	23
22	Sweden	1979	196.38	15	9.57	19	23.62	18	20.75	14	1.92	25	140.52	5
23	Switzerland	1979	128.76	24	20.49	10	12.71	24	27.93	9	3.52	22	64.11	25
24	Turkey	—	—	28	—	26	—	27	—	7	—	27	—	28
25	Soviet Union	1979	310.23	4	—	—	132.97	1	23.19	13	29.87	1	124.20	10
26	United Kingdom	1980	210.73	10	39.77	2	35.08	10	15.68	23	3.57	21	116.63	11
27	United States	1980	587.11	1	53.98	1	47.02	8	45.08	3	12.77	6	428.26	1
28	Yugoslavia	1979	155.18	19	9.41	20	33.68	11	19.09	16	7.67	10	85.33	18

Ind. = Index of the number of graduates per 100,000 population.
R = Rank – order from highest index.
Note: Alphabetical order of countries according to English spelling.

18. LIST OF INSTITUTIONS OF HIGHER EDUCATION

(1985–1986 ACADEMIC YEAR)

UNIVERSITIES

1. University of Warsaw	Warsaw
Branch of UW	Białystok
2. University of Gdańsk	Gdańsk
3. University of Silesia	Katowice
Branch of US	Cieszyn
Division of US	Sosnowiec
4. Jagiellonian University	Cracow
5. Marie Curie-Skłodowska University	Lublin
Branch of MCSU	Rzeszów
6. University of Łódź	Łódź
7. Adam Mickiewicz University	Poznań
8. Nicholas Copernicus University	Toruń
9. Bolesław Bierut University of Wrocław	Wrocław
10. University of Szczecin	Szczecin
11. Catholic University of Lublin	Lublin

HIGHER TECHNICAL SCHOOLS

1. Warsaw University of Science and Technology	Warsaw
Local branch	Płock
2. Białystok Technical University	Białystok
3. Częstochowa Technical University	Częstochowa
4. Gdańsk Technical University	Gdańsk
Branch of GTU	Elbląg
5. Wincenty Pstrowski Silesia Technical University	Gliwice
6. Świętokrzyska Technical University	Kielce
7. Tadeusz Kościuszko Cracow Technical University	Cracow
8. Stanisław Staszic University of Mining and Metallurgy	Cracow
9. Lublin Technical University	Lublin
10. Łódź Technical University	Łódź
Branch of LTU	Bielsko Biała
11. Poznań Technical University	Poznań
12. Ignacy Łukasiewicz Rzeszów Technical University	Rzeszów
13. Szczecin Technical University	Szczecin
14. Wrocław Technical University	Wrocław
Branch of WTU	Jelenia Góra
Branch of WTU	Legnica
Branch of WTU	Wałbrzych
15. Higher School of Engineering	Koszalin
16. Gen. A. Zawadzki Higher School of Engineering	Opole
17. K. Pułaski Higher School of Engineering	Radom
18. Y. Gagarin Higher School of Engineering	Zielona Góra

HIGHER INSTITUTES OF ECONOMICS

1. Central School of Planning and Statistics (SGPiS)	Warsaw
Local department of SGPiS	Rzeszów
2. Karol Adamiecki Academy of Economics	Katowice
3. Academy of Economics	Poznań
4. Academy of Economics	Cracow
5. Oskar Lange Academy of Economics	Wrocław
Branch of AE	Jelenia Góra
6. Academy of Social Sciences	Warsaw

HIGHER PEDAGOGICAL SCHOOLS

1. M. Grzegorzewska Higher School of Special Pedagogy	Warsaw
2. Higher Pedagogical School	Bydgoszcz
3. Higher Pedagogical School	Częstochowa
4. J. Kochanowski Higher Pedagogical School	Kielce
Branch of HPS	Piotrków Trybunalski
5. National Education Higher Pedagogical School	Cracow
Branch of HPS	Nowy Sącz
6. Higher Pedagogical School	Olsztyn
7. Silesian Insurgents Higher Pedagogical School	Opole
Branch of HPS	Racibórz
8. Higher Pedagogical School	Rzeszów
Branch of HPS	Tarnów
9. Higher Pedagogical School	Słupsk
10. Higher Pedagogical School	Zielona Góra
Branch of HPS	Jelenia Góra
Branch of HPS	Legnica

HIGHER AGRICULTURAL INSTITUTES

1. Agricultural Academy of Warsaw	Warsaw
2. Technical-Agricultural Academy	Bydgoszcz
3. H. Kołłątaja Agricultural Academy	Cracow
4. Agricultural Academy	Lublin
Branch of AA	Zamość
5. Agricultural-Technical Academy	Olsztyń
6. Agricultural Academy	Poznań
7. Higher Agricultural Pedagogical School	Siedlce
8. Agricultural Academy	Szczecin
9. Agricultural Academy	Wrocław

MEDICAL ACADEMIES

1. Medical Academy	Warsaw
2. J. Marchlewski Medical Academy	Białystok
3. Medical Academy	Bydgoszcz
4. Medical Academy	Gdańsk
5. L. Waryński Silesian Medical Academy	Katowice
6. N. Copernicus Medical Academy	Cracow
7. Medical Akademy	Lublin
8. Medical Akademy	Łódź
9. K. Marcinkowski Medical Academy	Poznań
10. Gen. K. Swierczewski Pomeranian Medical Academy	Szczecin
11. Medical Academy	Wrocław

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HIGHER SCHOOLS SUBORDINATED TO THE PRINCIPAL COMMITTEE FOR PHYSICAL EDUCATION AND SPORT

1. K. Swierczewski Academy of Physical Education	Warsaw
Branch of APE	Biała Podlaska
2. J. Sniadecki Academy of Physical Education	Gdańsk
3. Academy of Physical Education	Katowice
4. B. Czech Academy of Physical Education	Cracow
5. E. Piasecki Academy of Physical Education	Poznań
Branch of APE	Gorzów Wielkopolski
6. Academy of Physical Education	Wrocław
Branch of APE	Jelenia Góra

HIGHER THEATRE SCHOOLS

1. A. Zelwerowicz State Higher Theatre School	Warsaw
Branch of SHTS	Białystok
2. L. Solski State Higher Theatre School	Cracow
Branch of SHTS	Wrocław
3. State Higher Cinema, Television and Theatre School	Łódź

HIGHER MUSICAL SCHOOLS

1. Academy of Music	Warsaw
Branch of AM	Białystok
2. Academy of Music	Bydogoszcz
3. Academy of Music	Gdańsk
4. Academy of Music	Katowice
5. Academy of Music	Cracow
6. Academy of Music	Łódź
7. Academy of Music	Poznań
Branch of AM	Szczecin
8. Academy of Music	Wrocław

HIGHER SCHOOLS OF FINE ARTS

1. Academy of Fine Arts	Warsaw
2. State Higher School of Fine Arts	Gdańsk
3. Academy of Fine Arts	Cracow
Branch of AFA	Katowice
4. State Higher School of Fine Arts	Łódź
5. State Higher School of Fine Arts	Poznań
6. State Higher School of Fine Arts	Wrocław

HIGHER SCHOOLS SUBORDINATED TO THE OFFICE FOR MERCHANT MARINE

1. Merchant Marine Academy	Gdynia
2. Merchant Marine Academy	Szczecin

HIGHER THEOLOGICAL SCHOOLS

1. Catholic Theological Academy	Warsaw
2. Christian Theological Academy	Warsaw

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